United States
Department of
Agriculture

Natural
Resources
Conservation
Service

In cooperation with
United States Department
of the Interior, Bureau of
Land Management, and
the Wyoming Agricultural
Experiment Station

Soil Survey of Natrona County Area, Wyoming

How to Use This Soil Survey

General Soil Map

The general soil map, which is the color map preceding the detailed soil maps, shows the survey area divided into groups of associated soils called general soil map units. This map is useful in planning the use and management of large areas.

To find information about your area of interest, locate that area on the map, identify the name of the map unit in the area on the color-coded map legend, then refer to the section **General Soil Map Units** for a general description of the soils in your area.

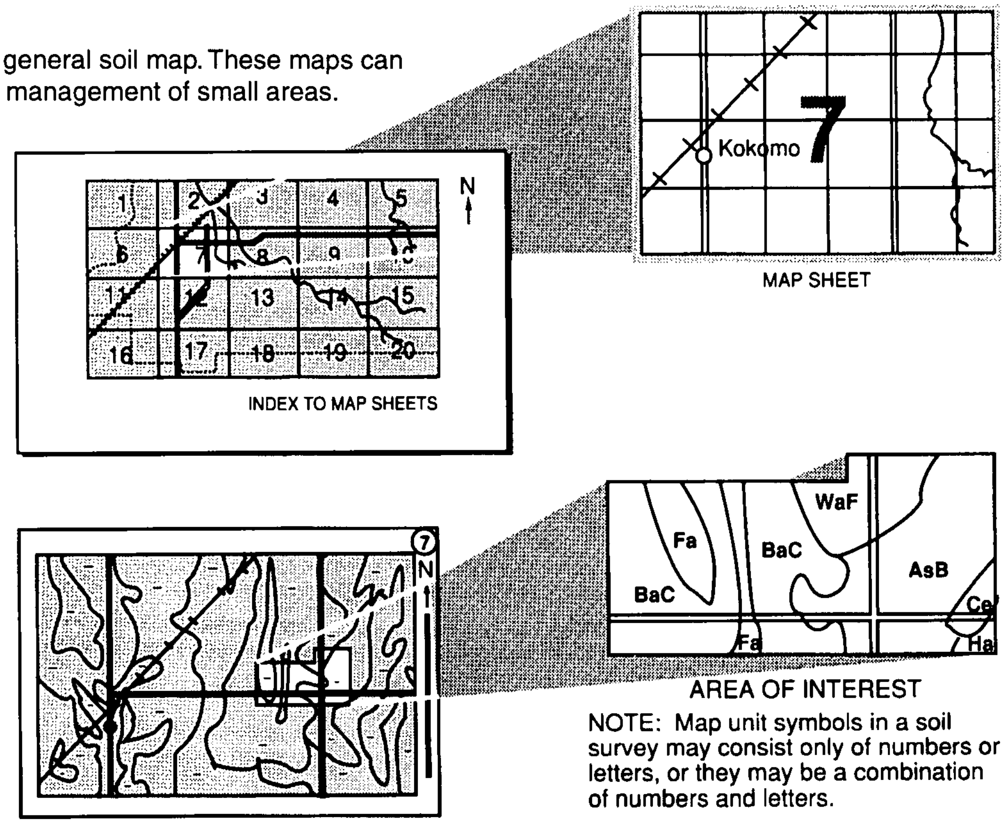
Detailed Soil Maps

The detailed soil maps follow the general soil map. These maps can be useful in planning the use and management of small areas.

To find information about your area of interest, locate that area on the **Index to Map Sheets**, which precedes the soil maps. Note the number of the map sheet and turn to that sheet.

Locate your area of interest on the map sheet. Note the map units symbols that are in that area. Turn to the **Contents**, which lists the map units by symbol and name and shows the page where each map unit is described.

The **Summary of Tables** shows which table has data on a specific land use for each detailed soil map unit. See **Contents** for sections of this publication that may address your specific needs.



NOTE: Map unit symbols in a soil survey may consist only of numbers or letters, or they may be a combination of numbers and letters.

This soil survey is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (formerly the Soil Conservation Service) has leadership for the Federal part of the National Cooperative Soil Survey.

Major fieldwork for this soil survey was completed in 1985. Soil names and descriptions were approved in 1985. Unless otherwise indicated, statements in this publication refer to conditions in the survey area in 1985. This survey was made cooperatively by the Natural Resources Conservation Service; United States Department of the Interior, Bureau of Land Management; and the Wyoming Agricultural Experiment Station. The survey is part of the technical assistance furnished to the Natrona County Conservation District.

Soil maps in this survey may be copied without permission. Enlargement of these maps, however, could cause misunderstanding of the detail of mapping. If enlarged, maps do not show the small areas of contrasting soils that could have been shown at a larger scale.

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Cover: An area of the Haverdad-Clarkelen-Arvada general soil map unit on the bottom land and terraces in the foreground. An area of the Hiland-Arvada-Theedle general soil map unit is on the hills in the background.

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Foreword

This soil survey contains information that can be used in land-planning programs in Natrona County Area, Wyoming. It contains predictions of soil behavior for selected land uses. The survey also highlights limitations and hazards inherent in the soil, improvements needed to overcome the limitations, and the impact of selected land uses on the environment.

This soil survey is designed for many different users. Farmers, ranchers, foresters, and agronomists can use it to evaluate the potential of the soil and the management needed for maximum food and fiber production. Planners, community officials, engineers, developers, builders, and home buyers can use the survey to plan land use, select sites for construction, and identify special practices needed to ensure proper performance. Conservationists, teachers, students, and specialists in recreation, wildlife management, waste disposal, and pollution control can use the survey to help them understand, protect, and enhance the environment.

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are shallow to bedrock. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

These and many other soil properties that affect land use are described in this soil survey. Broad areas of soils are shown on the general soil map. The location of each soil is shown on the detailed soil maps. Each soil in the survey area is described. Information on specific uses is given for each soil. Help in using this publication and additional information are available at the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

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State Conservationist
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Soil Survey of
Natrona County Area, Wyoming

By Lawrence K. Malnor and Susan E. Arnold, Natural Resources Conservation Service

Fieldwork by Susan E. Arnold, Ann M. Hogan, Lawrence K. Malnor, Marvin C. Suhr, and James W. Westerman, Natural Resources Conservation Service, and by private companies under contract with the Bureau of Land Management

United States Department of Agriculture, Natural Resources Conservation Service,
in cooperation with
United States Department of the Interior, Bureau of Land Management, and the
Wyoming Agricultural Experiment Station

The Natrona County Area comprises all of Natrona County, excluding about 5,000 acres of the Medicine Bow National Forest in the southeast corner of the county (fig. 1). The Area is in central Wyoming. The total area is about 5,361 square miles, or 3,431,080 acres.

This soil survey was made to satisfy the demands for resource information involving ranching, energy development, and housing and urban development.

General Nature of the Survey Area

This section provides general information about the survey area. It describes history and development; agriculture, natural resources, and land use; geology; physiography and drainage; and climate.

History and Development

In 1888, Carbon County was divided and Natrona County was established from the northern section. Natrona County was named after natrona, a sodium carbonate mineral found in the area. That same year, the city of Casper was officially established and became the county seat. Alcova, Mills, Evansville, Bar Nunn, Midwest, Edgerton, Natrona, Powder River, Waltman, Arminto, and Hiland are smaller communities in the county.

The first white man to visit the area was John Coulter in 1808. From 1840 to 1869, pioneers followed the Oregon and Mormon Trails to the western lands. They often stopped to carve their names on Independence Rock, which is also known as the "Register of the Desert." The North Platte River Bridge Station was built in the 1840's to protect the settlers from Indian attacks. It was later renamed Fort Casper, after a young lieutenant who died trying to rescue a fellow soldier during an Indian attack.

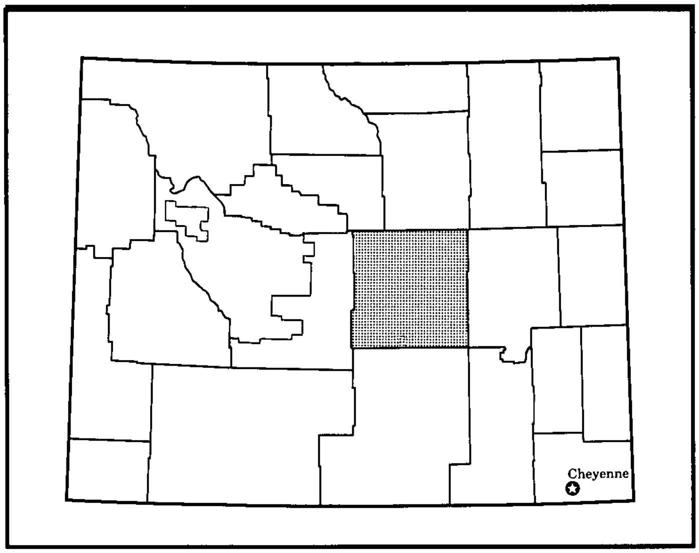

Figure 1.—Location of Natrona County Area in Wyoming.

Early attempts to grow dryland crops failed due to erratic and insufficient precipitation. Early settlers established sheep and cattle ranches covering vast areas of open rangeland. In 1883, the first oil well was drilled in the area. The local energy industry began with further discoveries in the Salt Creek Oil Field and other oil fields. By the 1920's there were three producing refineries in the cities of Casper and Evansville. The Little America Refinery is still active. Uranium, another important energy mineral, has been mined in the Gas Hills area along the western edge of the county. The local economy has historically followed a boom and bust cycle closely tied to the energy industry.

The Federal Reclamation Act of 1902 recognized the need for permanent water storage facilities in the West for agricultural needs. Pathfinder Reservoir was completed in 1909 under this act. Alcova Reservoir and Gray Reefs Reservoir are other water storage facilities in the county. These reservoirs supply a stable water source for irrigation to the Kendrick Project located west of Casper and to the North Platte Project located in eastern Wyoming and western Nebraska. They also provide important sources of electricity, water, and recreation.

Commercial transportation is available from Natrona County International Airport and a from bus depot in Casper. Freight and cattle are shipped by truck and train. A railroad passes east and west through the county. Interstate 25 connects Douglas to the east with Buffalo to the north, passing through Casper. State Highway 220 goes south to Rawlins, and U.S. Highway 20-26 runs west to Shoshoni. Access to the majority of the county is limited to unpaved county roads and unimproved trails.

Agriculture, Natural Resources, and Land Use

Agriculture in the survey area is characterized by cattle and sheep production. Less than 35,000 acres is used for irrigated hay and pasture. In most years less than 5,000 acres is used for small grain, much of which is planted as a cover crop during hay and pasture renovation.

Soil, and the native vegetation it supports, is the most extensive resource in the survey area. About 95 percent, or 3.2 million acres, of the area is rangeland. About 1.1 million acres is grazed under the administration of the Bureau of Land Management. Another 400,000 acres is State-administered land that is leased for grazing. The basin areas usually have light winter snowpacks and are suitable for winter livestock grazing. The higher elevations, however, are normally covered by deep snowpacks and are suitable for grazing only during the summer and early fall. Winters throughout the county are normally severe enough to require supplemental feeding of livestock. Most of this feed is produced locally on the irrigated lands.

Water is a limited resource in the survey area. All flowing, stored, or underground water within the State of Wyoming is the property of the State and is permitted for use by the State under a priority water-right system. The Seminoe Reservoir in Carbon County and the Alcova Reservoir in Natrona County supply water to the Casper-Alcova Irrigation District. The majority of the irrigated land within the survey area, about 24,000 acres, is irrigated with this water supply. The water in Pathfinder Reservoir is stored for use on lands in southeastern Wyoming and western Nebraska. This system of reservoirs on the North Platte River was designed primarily for irrigation water storage. Because of the associated flood control, however, substantial homesite and urban development has occurred on the flood plain of the North Platte River. About another 9,000 acres is irrigated with water diverted from the North Platte River and its major tributaries. Water is scarce in the remainder of the area, mostly in intermittent streams and stored in small reservoirs for ranch use, primarily livestock consumption. Wells with livestock watering tanks supplement the surface water supply.

Oil and natural gas are the important energy resources in the area and have been produced in the county since the early 1900's. Production and exploration continue today. According to information compiled by the Wyoming Oil and Gas Conservation Commission, Natrona County's 51 fields, with a total of 2,377 wells, have produced 9,007,249 barrels of oil and 13,878,163 million cubic feet of gas.

Bentonite mining and production is an important industry in the area. Exploration and mining centers are mainly on the Mowry and Thermopolis shales, with some deposits in the Cody shale.

Sand and gravel, most of which is used locally, are commonly mined in the alluvial deposits of the North Platte River near Casper.

Uranium exploration and mining were once very active on the western edge of the area. Because of economic conditions, most of the activity has ceased.

The Area has about 30,000 acres of woodland. Only about 6,000 acres is actively managed for the production of timber products, mainly firewood.

The Area provides habitat for large populations of pronghorn antelope, mule deer, whitetail deer, and elk. The Platte River, Alcova Reservoir, and Pathfinder Reservoir, among other bodies of water, provide habitat for various species of trout. Pathfinder Reservoir also provides habitat for walleye. Hunting, fishing, and tourism are important economic enterprises.

Geology

Parent material is one of five major factors which influence the development of soils. About 80 percent of the soil series in the county are distinguished by soil properties directly related to the parent material in which they formed. The distribution of the majority of parent materials in Natrona County is a reflection of the outcrop pattern of geologic formations, which in turn is controlled by geologic structure. Outcrop patterns are largely the result of mountain building and subsequent erosional processes as well as the result of the distribution of younger, overlying deposits. Most of the significant structural patterns in the county were established during the Laramide Orogeny, a period of intense crustal deformation that began in Late Cretaceous time and culminated in early Eocene time as high mountains were raised along reverse faults (Keefer, 1970).

Natrona County straddles several major structural features in Central Wyoming. Two regional synclines, the Wind River Basin to the west and the Powder River Basin to the northeast, are separated by the Casper Arch. The two basins are typical of the large, asymmetric, sedimentary and structural basins that formed in the Rocky Mountain region during the Laramide Orogeny. The Casper Arch is a broad, low northwest-trending structural divide of low relief that occupies much of central and northern Natrona County. The arch is a major, but not deeply eroded, upwarp with a nearly continuous, northwest-trending series of subsidiary folds on its west edge (Keefer, 1970). The arch structurally connects the Big Horn Mountains and the Laramie Range.

The structurally upwarped areas, including the Big Horn Mountains, the Laramie Range, the Granite Mountains, and the Rattlesnake Hills, have been stripped of Paleozoic, Mesozoic, and Cenozoic sedimentary cover. Precambrian crystalline basement rocks have been exposed in these areas. Only the Granite Mountains remain partially buried by Cenozoic deposits (Love, 1970). Generally speaking, the flanks of the major uplifted areas are girdled by folded and faulted rocks up to early Eocene in age. In places, particularly the Bates Hole area, the deformed older rocks are overlapped by nearly horizontal Eocene, Oligocene, and younger rocks with angular unconformity (Berry, 1950).

Geologic parent materials can be divided into six units based on relevant physical and chemical properties important to soils. A classification similar to one developed in Montana (Veseth, 1980) can by applied to Natrona County using the criteria of hardness or resistance to weathering, mineralogy, weathering products, grain size, general chemistry, and distribution within the county. Composite descriptions of the geologic parent material units are taken from a geologic literature review of the county. These units are described below in chronological order, from oldest to youngest.

Precambrian Era

Hard, coarse grained igneous and metamorphic rocks are in this unit. This is the oldest parent material unit in Natrona County and consists of granite, gneiss, and schist that collectively form the crystalline basement rocks of Wyoming. These basement rocks are cut by basaltic dikes. The rocks are highly variable due to several generations of faulting, folding, metamorphism, igneous intrusion, and variations in original rock type. The rocks are typically noncalcareous.

Early-Middle Paleozoic Era

Limestones, hard shales, and sandstones of the Cambrian, Mississippian, and Pennsylvanian age are in this unit. Cambrian rocks are represented by the Flathead Sandstone which was deposited as clean beach sands during the first advance of the sea. In this part of Wyoming, the Ordovician, Silurian, and Devonian Systems are not present, either because they were never deposited or have been eroded away. Rocks of the Mississippian and Pennsylvanian age show complex, abrupt changes of their depositional environments in both time and location. Large-scale advances and regressions of seas resulted in deposition of mainly organic carbonates and small amounts of clayey sediments of the Madison Limestone. The changing position of the shore environment led to deposition of the sediments of the cross-bedded sandstones of the Tensleep Sandstone and red shale of the Amsden Formation in northern Natrona County and interbedded sandstones and limestones of the Casper Formation in southeastern Natrona County (Keefer, 1966).

Late Paleozoic-Early Mesozoic Era

Soft, red-varicolored shales and hard sandstone of the Late Pennsylvanian through Early Createaceous age are in this unit. Shallow, oscillating seas located close to land masses deposited river-transported sediment that formed both marine and nonmarine shales, sandstones, and minor limestones. Red beds formed in restricted marine basins and on tidal mudflats during Permian and Triassic times. Coastal flood plains, freshwater lakes, and river channel conditions prevailed during Late Jurassic and Early Cretaceous times, when the shales and gravelly sandstones of the Morrison and Cloverly Formations were deposited. Marine conditions followed, resulting in the deposition of clayey sediments which later became the dark Thermopolis and Mowry Shales and interbeds of bentonite (Thomas, 1949).

Late Mesozoic-Early Cenozoic Era

Soft, gray-black shales, interbedded sandstones and shales, and moderately hard sandstones of Late Cretaceous and Early Tertiary age are in this unit. Oscillating seas resulted in thick accumulations of soft, clayey, calcareous to noncalcareous gray-black shales and sandstones of the Frontier, Cody, and Mesaverde Formations. Some volcanic episodes resulted in the accumulation of bentonite. The sediments of the marine shales were deposited over swampy coastal flood plain sands of the Lewis Shale, Fox Hills Sandstone, and Lance Formations. The sandstones are moderately resistant, fine to medium grained, and generally calcareous. The shales are soft, clayey, and mostly calcareous.

As conditions gradually changed from marine to continental with the onset of the Laramide Orogeny, flood plain, river channel, and swamp sediments were deposited in large subsiding basins. Coal, soft, calcareous shales, siltstones, and sandstones were laid down in the Fort Union, Wind River, and Wagon Bed Formations (Thomas, 1949).

Mid-Late Cenozoic Era

Soft, generally nonresistant channel, flood plain, and windblown deposits of Oligocene, Miocene, and Pliocene age are in this unit. Oligocene time began with erosion and the onset of violent volcanic activity near the Yellowstone-Absaroka Plateau in northwestern Wyoming. Vast amounts of volcanic ash were deposited directly as ash falls or were reworked and mixed with stream alluvium. The Oligocene White River Formation and Miocene Arikaree Formation marked a time of aggradation that largely buried all but the highest mountains in the county.

The White River Formation is generally high in content of silt and montmorillinitic clays except near or in the mountains where it consists of locally derived conglomerates and sands in fanlike deposits. The Arikaree Formation is a vast, thick sheet of windblown and water-laid sand. The Pliocene time was characterized by deposition of tuffaceous sandstone, claystone, and limestone in and near saline lakes in the Granite Mountains area and pink, red, and brown conglomerate, arkoses, and siltstones on the margin of Bates Hole (Berry, 1950).

Late Cenozoic Era

Unconsolidated alluvial deposits, sand dunes, landslides, colluvial deposits, and terrace and pediment pebbles of Pleistocene and Holocene age are in this unit. At the close of the Pliocene, the entire interior of the continent was elevated approximately 5,000 feet and the current cycle of erosion was established (Keefer, 1970). Natrona County was not glaciated during the Pleistocene Epoch. Several episodes of erosion resulted in multiple dissection of once extensive terraces and pediments. The terrace remnants are commonly mantled with thin, loamy soil over coarse deposits of sand, gravel, and cobbles that may be weakly to firmly cemented with calcium carbonate near the surface. The details of the present landscape have evolved by continued erosion since late Pliocene time.

Physiography and Drainage

The physiography of Natrona County is characterized by a wide variety of terrain. The four physiographic provinces represented are Wyoming Basin, Great Plains, Middle Rocky Mountains, and Southern Rocky Mountains (Crist, 1972). Elevations range from a low point of 4,700 feet on Salt Creek 5 miles north of Midwest in sec. 25, T. 41 N., R. 79 W., to a high point of 9,121 feet on an unnamed peak in the northwest corner of the county in sec. 14, T. 40 N., R. 87 W.

The Wyoming Basin province occupies the southwestern portion of the county. Included within this province are the Granite Mountains and the Rattlesnake Hills.

The Granite Mountains area is the major anticlinal uplift in central Wyoming. It is 90 miles long and 30 miles wide and has elevations ranging from about 6,000 to 7,000 feet. Conspicuously bald knobs and exfoliation domes of Precambrian granite, such as Moonstone, Lankin Dome, and Independence Rock, project up to 1,400 feet above essentially horizontal late Tertiary sediments (Love, 1970). Small alluvial fans and gently sloping pediments flank the granite domes on all sides (Van Houten, 1964).

The Rattlesnake Hills northwest of the Granite Mountains cover 150 square miles. The hills are eroded remnants of an anticline with an exposed Precambrian crystalline rock core. Elevations commonly range from 7,200 to 8,200 feet. Garfield Peak, at 8,244 feet, is the highest point in this part of the county`(Pekarek, 1977).

The topography in the northwestern (e.g., Hells Half Acre) and southeastern (e.g., Bates Hole) parts of the Wyoming Basin in Natrona County is characterized by rolling hills, deep gullies, and badlands produced in nonresistant rocks of Tertiary age.

The Missouri Plateau section of the Great Plains province lies in the northeastern part of Natrona County. Typical landforms include broad valleys, badlands, deeply eroded gullies, and isolated hills formed in gently inclined, sedimentary rocks of late Cretaceous and early Tertiary age. Resistant, easterly dipping sandstone beds form linear escarpments along the eastern margin of the area. North of the Platte River and east of Casper is an area of sand dunes. This area is 125 square miles in size.

Another strip of sand dunes, 2 miles wide by 25 miles long, occurs in the central portion of the county, east of the town of Powder River.

The Middle Rocky Mountain province is represented by the southern end of the Big Horn Mountains in northwestern Natrona County. The rugged terrain is mountainous, and deep canyons that cut through Paleozoic and Precambrian rocks are common. Elevations range from about 6,000 to 9,121 feet in this area.

The Southern Rocky Mountains province occurs in the southeastern corner of the county south of the North Platte River. The northern end of the Laramie Range is in this province. Topographic features include steep drainage slopes, narrow valleys, and rugged, mountainous terrain underlain by resistant Precambrian crystalline rocks. Elevations generally range from 6,000 to 8,000 feet (Crist, 1972).

Various types of drainage patterns can be recognized in Natrona County. In the alternating resistant hogbacks and nonresistant valleys of the folded pre-Tertiary rocks, drainage patterns tend to be of the trellis type. Trellis patterns reflect structural control with subparallel streams aligned along the strike of the rock formations and primary tributaries at right angles to the main stream.

Annular patterns occur around maturely dissected structural domes which have alternating beds of strongly resistant and nonresistant beds around them; Notches Dome and Pine Mountain are examples in central Natrona County. In areas where the rocks are essentially uniform in composition and lack structural control, such as broad areas of Cody Shale outcrops on the Casper Arch, dendritic patterns are common. Some of today's drainage patterns were inherited from ancestral streams that flowed upon a cover mass which does not now exist. As the streams cut their valleys downward, they encountered buried transverse geologic structures and continued cutting down through them. Such features are called superposed valleys (Thornbury, 1969), and examples are numerous in Wyoming; the Sweetwater River through Devils Gate is a classic example.

Climate

Climate varies widely within the Natrona County Area, mainly because of abrupt changes in elevation. Annual precipitation ranges from about 7 inches in an area south of the Big Horn Mountains in the northwestern part of the area to about 35 inches on the tops of Casper Mountain and Muddy Mountain south of Casper. Annual precipitation ranges from 10 to 14 inches in the majority of the area. Moisture from the Pacific Ocean is largely blocked by numerous mountain chains to the west. The climate is generally classified as semiarid. Frost commonly occurs in the mountain areas during summer months. The average frost-free period at the Natrona County International Airport, located west of Casper, is about 120 days. Temperatures show large diurnal and annual temperature variations due to the relatively high elevation and dry air, which permits rapid incoming and outgoing radiation, and also to the passage of both warm and cold air masses. Windy days are quite frequent during winter and early spring. The stronger winds are usually from the southwest. They tend to raise the temperature because the air is compressed and heated as it moves downslope.

The following information is from data recorded by the National Weather Service Office at the airport. In winter, the average temperature is 25 degrees F, the average daily minimum temperature is 15 degrees F, and the average daily maximum temperature is 35 degrees F. The lowest temperature on record, which occurred in January 1972, is -40 degrees F. In summer, the average temperature is 67 degrees F, the average daily minimum temperature is 52 degrees F, and the average daily maximum temperature is 83 degrees F. The highest recorded temperature, which occurred in July 1954, is 104 degrees F.

The average annual precipitation is 11.97 inches. Of this, 7.61 inches, or 64 percent, usually falls in April through September. The growing season for most crops falls within this period. The heaviest precipitation for 24 hours during the period of record was 3.00 inches in April 1974. Thunderstorms occur on about 35 days each year, and most occur in June and July.

The average seasonal snowfall is 80.3 inches. The greatest snowfall for 24 hours during the period of record was 31.1 inches in December 1982. Measurable snowfall commonly occurs as early in the season as September and as late as early June.

The average relative humidity in midafternoon is about 44 percent. Humidity is higher at night, and the average at dawn is about 71 percent. The sun shines 95 percent of the time possible in summer and 93 percent in winter. The prevailing wind is from the southwest. Average windspeed is 13 miles per hour. In winter, the average windspeed is 16 miles per hour, and in summer the average windspeed is 11 miles per hour. The highest windspeed during the period of record was 81 miles per hour at the airport in March of 1956. Windy days are quite frequent during winter and spring months.

Based on data from the period of 1941 to 1991, the first occurrence of 32 degrees F in the fall in 5 years in 10 is September 21 and the last occurrence in the spring in 5 years in 10 is May 22.

Table 1 gives data on temperature and precipitation for the survey area as recorded at the Natrona County International Airport, west of Casper, in the period 1941 to

1991. Table 2 shows probable dates of the first freeze in fall and the last freeze in spring. Table 3 provides data on length of the growing season.

Growing degree days are shown in table 1. They are equivalent to "heat units." During the month, growing degree days accumulate by the amount that the average temperature each day exceeds a base temperature (40 degrees F). The normal monthly accumulation is used to schedule single or successive plantings of a crop between the last freeze in spring and the first freeze in fall.

How This Survey Was Made

This survey was made to provide information about the soils and miscellaneous areas in the survey area. The information includes a description of the soils and miscellaneous areas and their location and a discussion of their suitability, limitations, and management for specified uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They dug many holes to study the soil profile, which is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

The soils and miscellaneous areas in the survey area are in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind or segment of the landscape. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landscape, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Individual soils on the landscape commonly merge into one another as their characteristics gradually change. To construct an accurate map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil scientists from the Natural Resources Conservation Service completed the fieldwork in the northern and eastern parts of the survey area. Soil scientists from the Bureau of Land Management and private companies under contract with the Bureau of Land Management completed the fieldwork in the southeastern and southern parts.

The descriptions, names, and delineations of some of the soils in this survey area do not fully agree with those of the soils in adjacent survey areas. Differences are the result of a better knowledge of soils, modifications in series concepts, or variations in the intensity of mapping or in the extent of the soils in the survey areas. Despite these differences, the response and management of the soils are similar for most uses.

General Soil Map Units

The general soil map at the back of this publication shows broad areas that have a distinctive pattern of soils, relief, and drainage. Each map unit on the general soil map is a unique natural landscape. Typically, it consists of one or more major soils or miscellaneous areas and some minor soils or miscellaneous areas. It is named for the major soils or miscellaneous areas. The soils or miscellaneous areas making up one unit can occur in another but in a different pattern.

The general soil map can be used to compare the suitability of large areas for general land uses. Areas of suitable soils or miscellaneous areas can be identified on the map. Likewise, areas that are not suitable can be identified.

Because of its small scale, the map is not suitable for planning the management of a farm or field or for selecting a site for a road or building or other structure. The soils in any one map unit differ from place to place in slope, depth, drainage, and other characteristics that affect management.

The general soil map of this survey area is part of the State Soil Geographic (STATSGO) database and general soil map of Wyoming. Map symbols are the same as those for the STATSGO general soil map units. More information about the general soil map units can be obtained from the STATSGO database, available from the Natural Resources Conservation Service.

The general soil map units in this survey have been grouped for broad interpretive purposes. Each of the broad groups and the map units in each group are described on the following pages.

Map Unit Descriptions

Cool and Warm Soils on Flood Plains and Associated Terraces

This group consists of three map units. The soils in this group are nearly level or gently sloping, are very deep, and are moderately well drained, well drained, or somewhat excessively drained. The average annual precipitation is 7 to 14 inches, the average annual air temperature is 38 to 49 degrees F, and the average frost-free period is 90 to 130 days.

This group is used mainly for livestock grazing and wildlife habitat. A few areas are used for irrigated hay and pasture or for homesite and urban development.

WY217. Typic Torrifluvents-Effington

Very deep, well drained, nearly level or gently sloping soils on flood plains and associated terraces

Slope is 0 to 6 percent in areas of this unit. The average annual precipitation is 7 to 9 inches, the average annual air temperature is 44 to 49 degrees F, and the average frost-free period is 110 to 130 days.

This unit is 50 percent Typic Torrifluvents and similar soils and 20 percent Effington and similar soils. The remaining 30 percent consists of components of minor extent.

Typic Torrifluvents and similar soils are on nearly level or gently sloping flood plains. These soils are very deep and well drained. They formed in stratified alluvium derived from various sources. The soils commonly are moderately coarse textured, medium textured, or moderately fine textured throughout but in some areas have sand and gravel below a depth of 20 inches. The soils are moderately saline or strongly saline and are moderately alkaline to very strongly alkaline.

Effington and similar soils are on nearly level or gently sloping terraces. These soils are very deep and well drained. They formed in alluvium derived from sodic shale. The soils have a moderately fine textured surface layer and a moderately fine textured or fine textured subsoil. They are moderately saline and very strongly alkaline.

Of minor extent in this unit are Uffens soils and Slickspots on terraces and saline Aquic Ustifluvents on flood plains.

This unit is used mainly for livestock grazing and wildlife habitat. Production of vegetation suitable for livestock grazing is limited mainly by low annual precipitation and the salinity and alkalinity of the soils.

This unit provides winter and year-round habitat for pronghorn antelope, mule deer, and white-tailed deer. Also included are habitat for such species as water shrew, muskrat, beaver, raccoon, mink, white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert and Nutall's cottontails, coyote, and red fox and habitat for birds common to shrub steppes, fields, and wetland shrubs and trees and for birds associated with water.

WY310. Haverdad-Clarkelen-Arvada

Very deep, well drained or somewhat excessively drained, nearly level or gently sloping soils on flood plains and associated terraces

Slope is 0 to 6 percent in areas of this unit. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 44 to 49 degrees F, and the average frost-free period is 110 to 130 days.

This unit is 30 percent Haverdad and similar soils, 30 percent Clarkelen and similar soils, and 20 percent Arvada and similar soils. The remaining 20 percent consists of components of minor extent.

Haverdad and similar soils are on nearly level or gently sloping flood plains. These soils are very deep and well drained. They formed in alluvium derived from various sources. The soils are highly stratified and are dominantly medium textured throughout with thin moderately coarse textured and moderately fine textured layers.

Clarkelen and similar soils are on nearly level or gently sloping flood plains. These soils are very deep and somewhat excessively drained. They formed in alluvium derived from various sources. The soils are highly stratified and are dominantly moderately coarse textured throughout with thin coarse textured or medium textured layers.

Arvada and similar soils are on nearly level or gently sloping terraces. These soils are very deep and well drained. They formed in alluvium derived from sodic shale. The soils have a moderately fine textured surface layer and a fine textured subsoil. They are moderately saline or strongly saline and are very strongly alkaline.

Of minor extent in this unit are Docpar, Hiland, and Keyner soils on terraces; Rivra and Draknab soils on flood plains; and somewhat poorly drained or poorly drained soils along stream channels and in swales.

This unit is used mainly for livestock grazing and wildlife habitat. It is also used for irrigated hay and pasture or for housing and urban development.

The suitability of this unit for livestock grazing is good. Production of vegetation on the Arvada soils, however, is limited by the salinity and alkalinity.

If the Arvada soils are used for irrigated hay and pasture, the main limitation is the salinity and alkalinity. The Haverdad and Clarkelen soils are well suited to irrigated hay and pasture.

If this unit is used for housing and urban development, the main limitations are the rare flooding hazards of the Haverdad and Clarkelen soils, and the shrink-swell potential and the permeability of the Arvada soil.

This unit provides winter and year-round habitat for pronghorn antelope, mule deer, and white-tailed deer. The Casper Creek watershed provides crucial winter habitat for pronghorn antelope. The Stinking Creek watershed in this unit provides crucial winter habitat for mule deer, and the Casper Creek watershed provides crucial year-round habitat for mule deer. Also included are habitat for such species as water shrew, muskrat, beaver, raccoon, mink, white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert and Nutall's cottontails, coyote, and red fox and habitat for birds common to shrub steppes, fields, and wetland shrubs and trees and for birds associated with water.

WY311. Havermom-Tisworth

Very deep, well drained or moderately well drained, nearly level or gently sloping soils on flood plains and associated terraces

Slope is 0 to 5 percent in areas of this unit. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 38 to 42 degrees F, and the average frost-free period is 90 to 110 days.

This unit is 50 percent Havermom and similar soils and 30 percent Tisworth and similar soils. The remaining 20 percent consists of components of minor extent.

Havermom and similar soils are on nearly level or gently sloping flood plains. These soils are very deep and moderately well drained. They formed in alluvium derived from various sources. The soils are highly stratified and are dominantly medium textured throughout with thin coarse textured and moderately fine textured layers. These soils are slightly saline and very strongly alkaline.

Tisworth and similar soils are on nearly level or gently sloping terraces. These soils are very deep and well drained. They formed in alluvium derived from sodic shale and sandstone. The surface layer is moderately coarse textured. The upper part of the subsoil is medium textured to moderately fine textured. The lower part is moderately coarse textured to medium textured. The subsoil is moderately saline and very strongly alkaline.

Of minor extent in this unit are Rock River and Absher soils on terraces and somewhat poorly drained or poorly drained soils along stream channels and in swales.

This unit is used mainly for livestock grazing and wildlife habitat. Production of vegetation suitable for livestock grazing is limited mainly by the salinity and alkalinity of the soils.

This unit provides winter and year-round habitat for pronghorn antelope and mule deer. The area of this unit along Horse Creek and Fish Creek, north of Pathfinder Reservoir, provides crucial winter habitat for pronghorn antelope. Also included are habitat for such species as water shrew, muskrat, beaver, raccoon, mink, white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert and Nutall's cottontails, coyote, and red fox and habitat for birds common to shrub steppes, fields, and wetland shrubs and trees and for birds associated with water.

Rock Outcrop and Warm Soils on Uplands

This group consists of 11 map units. The soils in this group are nearly level to very steep, very shallow to very deep, and are excessively drained or well drained. The average annual precipitation is 7 to 14 inches, the average annual air temperature is 36 to 49 degrees F, and the average frost-free period is 80 to 130 days.

This group is used mainly for livestock grazing and wildlife habitat. A few areas are used for homesite and urban development or for irrigated hay and pasture.

WY216. Persayo-Griffy

Shallow to very deep, well drained, nearly level to moderately steep soils on hills, terraces, and alluvial fans

Slope is 0 to 30 percent in areas of this unit. The average annual precipitation is 7 to 9 inches, the average annual air temperature is 44 to 47 degrees F, and the average frost-free period is 110 to 130 days.

This unit is 40 percent Persayo and similar soils and 35 percent Griffy and similar soils. The remaining 25 percent consists of components of minor extent.

Persayo and similar soils are on moderately sloping to moderately steep ridges, hills, and terraces breaks. These soils are shallow and well drained. They formed in residuum derived from shale and siltstone. The soils are medium textured to moderately fine textured. Bedrock is at a depth of 10 to 20 inches.

Griffy and similar soils are on nearly level to strongly sloping hills, alluvial fans, and terraces. These soils are very deep and well drained. They formed in alluvium derived from various sources. The soils are moderately coarse textured in the surface layer, moderately fine textured in the upper part of the subsoil, moderately coarse textured in the lower part of the subsoil, and coarse textured in the substratum.

Of minor extent in this unit are Saddle, Wallson, and Enos soils on hills, terraces, and alluvial fans.

This unit is used mainly for livestock grazing and wildlife habitat. Production of vegetation suitable for livestock grazing is limited mainly by the low annual precipitation. The low available water capacity and depth of the Persayo soils also limit production.

This unit provides winter and year-round habitat for pronghorn antelope and mule deer. The area of this unit in the Badwater Creek watershed provides crucial winter habitat for mule deer. Also included are habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

WY315. Shingle-Rencot-Rock Outcrop

Very shallow and shallow, well drained, gently sloping to steep soils and Rock outcrop on dip slopes, escarpments, hills, and ridges

Slope is 5 to 45 percent in areas of this unit. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 36 to 49 degrees F, and the average frost-free period is 80 to 130 days.

This unit is 35 percent Shingle and similar soils, 35 percent Rencot and similar soils, and 10 percent Rock outcrop. The remaining 20 percent consists of components of minor extent.

Shingle and similar soils are on moderately sloping to steep ridges, hills, and escarpments. These soils are shallow and well drained. They formed in residuum derived from shale, siltstone, and sandstone. The soils are medium textured or moderately fine textured. Bedrock is at a depth of 10 to 20 inches.

Rencot and similar soils are on gently sloping to steep dip slopes, ridges, hills, and escarpments. These soils are very shallow or shallow and are well drained. They formed in residuum derived from sandstone. The soils are moderately coarse textured or moderately fine textured and contain many rock fragments. Bedrock is at a depth of 8 to 20 inches.

Rock outcrop consists of exposed thinly bedded sedimentary bedrock.

Of minor extent in this unit are Bowbac and Keeline soils on foot slopes, Cambria and Arvada soils on alluvial fans, badland, and Rubble land. On Pine Ridge, in the northeastern corner of the survey area, Gateridge, Worf Variant, and Cushool Variant are soils of minor extent.

This unit is used mainly for livestock grazing and wildlife habitat. A few areas are used for homesite development.

Production of vegetation suitable for livestock grazing is limited mainly by the available water capacity and depth of the soils.

If this unit is used for homesite development, the main limitations are the depth to bedrock and the slope.

This unit provides winter, summer, and year-round habitat for pronghorn antelope. The area of this unit in the Bates Creek watershed provides crucial winter habitat for pronghorn antelope. The unit provides winter and year-round habitat for mule deer and elk and year-round habitat for white-tailed deer. In the Smith Creek, Badwater Creek, and Buffalo Creek watersheds, this unit provides crucial winter habitat for mule deer. Also included are habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

WY316. Hiland-Arvada-Theedle

Moderately deep and very deep, well drained, nearly level to strongly sloping soils on terraces, alluvial fans, and hillslopes

Slope is 0 to 15 percent in areas of this unit. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 44 to 49 degrees F, and the average frost-free period 110 to 130 days.

This unit is 40 percent Hiland and similar soils, 20 percent Arvada and similar soils, and 20 percent Theedle and similar soils. The remaining 20 percent consists of components of minor extent.

Hiland and similar soils are on nearly level to strongly sloping terraces, alluvial fans, and foot slopes. These soils are very deep and well drained. They formed in alluvium derived from sandstone and in eolian deposits. The surface layer is coarse textured or moderately coarse textured. The upper part of the subsoil is moderately fine textured. The lower part of the subsoil and the substratum are coarse textured or moderately coarse textured.

Arvada and similar soils are on nearly level or gently sloping alluvial fans and terraces. These soils are very deep and well drained. They formed in alluvium derived from sodic shale. The soils have a moderately fine textured surface layer and a fine textured subsoil. They are moderately saline or strongly saline and are very strongly alkaline.

Theedle and similar soils are on gently sloping to strongly sloping hillsides. These soils are moderately deep and well drained. They formed in alluvium and residuum derived from siltstone, sandstone, and shale. The soils are medium textured or moderately fine textured. Bedrock is at a depth of 20 to 40 inches.

Of minor extent in this unit are Shingle soils on ridges; Amodac, Cadoma, and Keeline soils on hillslopes; Clarkelen and Haverdad soils in drainageways; and Rock outcrop on ridges and escarpments.

This unit is used mainly for livestock grazing and wildlife habitat. A few areas near Casper are used for housing and urban development.

This unit produces a good stand of vegetation suitable for livestock grazing if it is properly managed. Production on the Arvada and similar soils is limited mainly by the salinity and alkalinity of the soils.

If this unit is used for housing and urban development, the main limitations are the shrink-swell potential and restricted permeability of the Arvada and similar soils and the depth to bedrock and the slope of the Theedle and similar soils. The Hiland soils are well suited to housing and urban development in the nearly level or gently sloping areas. The steepness of slope is a concern in the more sloping areas.

This unit provides winter, summer, and year-round habitat for pronghorn antelope. It provides winter and year-round habitat for mule deer and year-round habitat for white-tailed deer. The area of this unit in the western part of the survey area provides crucial winter and year-round habitat for pronghorn antelope. This area also provides crucial winter and year-round habitat for mule deer. Also included are habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

WY317. Bowbac-Cambria-Taluce

Very shallow, shallow, moderately deep, and very deep, well drained, nearly level to moderately steep soils on hills, plateaus, and alluvial fan terraces

Slope is 0 to 20 percent in areas of this unit. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 44 to 49 degrees F, and the average frost-free period is 110 to 130 days.

This unit is 30 percent Bowbac and similar soils, 25 percent Cambria and similar soils, and 25 percent Taluce and similar soils. The remaining 20 percent consists of components of minor extent.

Bowbac and similar soils are on gently sloping to strongly sloping hillslopes. These soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived from sandstone. The surface layer is moderately coarse textured. The upper part of the subsoil is moderately fine textured. The lower part of the subsoil is moderately coarse textured to moderately fine textured. Bedrock is at a depth of 20 to 40 inches.

Cambria and similar soils are on nearly level to moderately sloping plateaus and alluvial fan terraces. These soils are very deep and well drained. They formed in alluvium derived from sandstone and shale. The surface layer, subsoil, and substratum are medium textured or moderately fine textured.

Taluce and similar soils are on moderately sloping to moderately steep hills. These soils are very shallow or shallow and are well drained. They formed in residuum derived from sandstone. The soils are moderately coarse textured. Bedrock is at a depth of 6 to 20 inches.

Of minor extent in this unit are Keeline soils on foot slopes, Arvada soils on alluvial fans, Amodac soils on hillslopes, Clarkelen and Haverdad soils in drainageways, Rock outcrop on ridges and escarpments, and gullied land.

This unit is used mainly for livestock grazing and wildlife habitat. If it is properly managed, this unit produces a good stand of vegetation suitable for livestock grazing. Production is limited mainly by the available water capacity and depth of the Taluce and similar soils.

This unit provides winter, summer, and year-round habitat for pronghorn antelope and mule deer. Also included are habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

WY318. Griffy-Saddle-Bributte

Shallow, moderately deep, and very deep, well drained, nearly level to moderately steep soils on hills, ridges, terraces, and alluvial fans

Slope is 0 to 30 percent in areas of this unit. The average annual precipitation is 7 to 9 inches, the average annual air temperature is 44 to 47 degrees F, and the average frost-free period is 110 to 130 days.

This unit is 35 percent Griffy and similar soils, 30 percent Saddle and similar soils, and 20 percent Bributte and similar soils. The remaining 15 percent consists of components of minor extent.

Griffy and similar soils are on nearly level to strongly sloping terraces and alluvial fans. These soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is moderately coarse textured. The upper part of the subsoil is moderately fine textured. The lower part and the substratum are coarse textured or moderately coarse textured.

Saddle and similar soils are on moderately sloping to strongly sloping hills. These soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived from sandstone and shale. The surface layer is moderately coarse textured. The upper part of the subsoil is moderately fine textured. The lower part is moderately coarse textured. Bedrock is at a depth of 20 to 40 inches.

Bributte and similar soils are on strongly sloping to moderately steep hills and ridges. These soils are shallow and well drained. They formed in residuum derived from sodic shale. The soils are moderately fine textured or fine textured. Bedrock is at a depth of 10 to 20 inches. These soils are moderately saline and very strongly alkaline.

Of minor extent in this unit are Effington and Uffens soils on alluvial fans, Persayo and Oceanet soils on ridges and hills, Typic Torrifluvents in drainageways, Rock outcrop on ridges and escarpments, and badlands.

This unit is used mainly for livestock grazing and wildlife habitat. Production of vegetation suitable for livestock grazing is limited mainly by low annual precipitation. Production on the Bributte and similar soils is also limited by the alkalinity, salinity, available water capacity, and depth.

This unit provides winter and year-round habitat for pronghorn antelope and mule deer. The area of this unit in the Alkali Creek watershed provides crucial winter habitat for mule deer. Also included are habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

WY320. Copeman-Samday-Savageton

Very shallow, shallow, moderately deep, and very deep, well drained, nearly level to very steep soils on pediments, ridges, and hills

Slope is 0 to 60 percent in areas of this unit. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 44 to 49 degrees F, and the average frost-free period is 110 to 130 days.

This unit is 40 percent Copeman and similar soils, 30 percent Samday and similar soils, and 15 percent Savageton and similar soils. The remaining 15 percent consists of components of minor extent.

Copeman and similar soils are on nearly level to moderately sloping pediments. These soils are very deep and well drained. They formed in alluvium derived from various sources. These soils have a medium textured surface layer and upper part of the subsoil. The lower part is medium textured and contains many rock fragments.

Samday and similar soils are on gently sloping to very steep ridges and hills. These soils are very shallow or shallow and are well drained. They formed in residuum derived from shale. These soils are fine textured throughout. Bedrock is at a depth of 6 to 20 inches.

Savageton and similar soils are on gently sloping to moderately steep hills. These soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived from shale. These soils are fine textured throughout. Bedrock is at a depth of 20 to 40 inches.

Of minor extent in this unit are Haverdad, Clarkelen, and Lander soils in drainageways; Silhouette soils on alluvial fans and in drainageways; Rock outcrop on ridges and escarpments; and urban land.

This map unit is used mainly for homesite and urban development or for livestock grazing and wildlife habitat. A few areas are used for irrigated hay and pasture.

The main limitations for homesite and urban development are the slope, high shrink-swell potential, restricted permeability, and the depth to bedrock of the Samday, Savageton, and similar soils. The Copeman and similar soils are moderately well suited to homesite and urban development. The main limitation is the high content of gravel in the soil.

The Copeman and Savageton soils are well suited to livestock grazing. Production of vegetation suitable for livestock grazing on the Samday and similar soils is limited mainly by the available water capacity and depth.

The Samday, Savageton, and similar soils are poorly suited to irrigated hay and pasture because of depth to bedrock, available water capacity, and slope. The Copeman and similar soils are moderately well suited to irrigated hay and pasture. The main limitation is the available water capacity of the soil. The slope is also a concern in the moderately sloping areas.

This unit provides winter, summer, and year-round habitat for pronghorn antelope and mule deer. Also included are habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

WY321. Orpha-Vonalee-Hiland

Very deep, excessively drained or well drained, gently sloping to moderately steep soils on stable dunes

Slope is 3 to 30 percent in areas of this unit. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 44 to 49 degrees F, and the average frost-free period is 110 to 130 days.

This unit is 35 percent Orpha and similar soils, 30 percent Vonalee and similar soils, and 25 percent Hiland and similar soils. The remaining 10 percent consists of components of minor extent.

Orpha and similar soils are on gently sloping to moderately steep stable dunes. These soils are very deep and excessively drained. They formed in eolian deposits derived from various sources. The soils are coarse textured throughout.

Vonalee and similar soils are on gently sloping to strongly sloping stable dunes. These soils are very deep and well drained. They formed in eolian deposits derived from various sources. The surface layer is coarse textured. The upper part of the subsoil is moderately coarse textured. The lower part is moderately coarse textured or coarse textured.

Hiland and similar soils are on gently sloping to strongly sloping terraces, hills, and stable dunes. These soils are very deep and well drained. They formed in eolian deposits derived from various sources. The surface layer is coarse textured or moderately coarse textured. The upper part of the subsoil is moderately fine textured. The lower part and the substratum are coarse textured or moderately coarse textured.

Of minor extent in this unit are Arvada soils in small basins, Taluce soils and Rock outcrop on ridges, and dune land.

This unit is used mainly for livestock grazing and wildlife habitat. A few areas near Casper are used for homesite development.

If it is properly managed, this unit produces a good stand of vegetation suitable for livestock grazing.

This unit is moderately well suited to homesite development. The main limitations are the slope, the hazard of soil blowing during construction, and the hazard of septic systems contaminating the ground water supplies if the density of housing is high.

This unit provides winter and year-round habitat for pronghorn antelope and mule deer and year-round habitat for white-tailed deer. The area of this unit in the Casper Creek watershed and the area northeast of Casper provide crucial winter and year-round habitat for pronghorn antelope. Also included are habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

WY322. Roughlock-Redsun-Redbow

Very shallow to very deep, well drained, nearly level to moderately steep soils on foot slopes, dip slopes, and alluvial fans

Slope is 0 to 30 percent in areas of this unit. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 44 to 49 degrees F, and the average frost-free period is 110 to 130 days.

This unit is 40 percent Roughlock and similar soils, 30 percent Redsun and similar soils, and 15 percent Redbow and similar soils. The remaining 15 percent consists of components of minor extent.

Roughlock and similar soils are on nearly level to strongly sloping foot slopes, dip slopes, and alluvial fans. These soils are deep or very deep and are well drained. They formed in slopewash alluvium derived from siltstone. The surface layer is medium textured. The subsoil is moderately fine textured or medium textured.

Redsun and similar soils are on gently sloping to moderately steep dip slopes. These soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from siltstone and limestone. These soils are medium textured throughout and contain many rock fragments. Bedrock is at a depth of 4 to 20 inches.

Redbow and similar soils are on gently sloping to moderately sloping dip slopes. These soils are moderately deep and well drained. They formed in residuum and slopewash alluvium derived from siltstone and limestone. These soils are medium textured throughout. Bedrock is at a depth of 20 to 40 inches.

Of minor extent in this unit are Buffcreek soils on terraces and alluvial fans, Redbank soils in drainageways, Rekop soils on hills, Rock outcrop on escarpments and ridges, and Rubble land.

This unit is used mainly for livestock grazing and wildlife habitat. Production of vegetation suitable for livestock grazing is limited mainly by the available water capacity and depth of the Redsun and similar soils.

This unit provides winter, summer, and year-round habitat for pronghorn antelope, mule deer, and elk and provides year-round habitat for white-tailed deer. The areas of the unit in the Stinking Creek, Corral Creek, Badwater Creek, and Buffalo Creek watersheds provide crucial winter habitat for mule deer. Also included are habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

WY324. Bowbac-Sunup-Hiland

Shallow, moderately deep, and very deep, well drained, gently sloping to moderately steep soils on dip slopes and foot slopes

Slope is 2 to 30 percent in areas of this unit. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 44 to 49 degrees F, and the average frost-free period is 110 to 130 days.

This unit is 30 percent Bowbac and similar soils, 30 percent Sunup and similar soils, and 20 percent Hiland and similar soils. The remaining 20 percent consists of components of minor extent.

Bowbac and similar soils are on the gently sloping to strongly sloping lower part of the dip slopes. These soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived from sandstone. The surface layer is moderately coarse textured. The upper part of the subsoil is moderately fine textured. The lower part is moderately coarse textured to moderately fine textured. Bedrock is at a depth of 20 to 40 inches.

Sunup and similar soils are on the moderately sloping to moderately steep upper part of the dip slopes. These soils are shallow and well drained. They formed in residuum derived from sandstone. These soils are moderately fine textured or medium textured throughout and contain many rock fragments. Bedrock is at a depth of 10 to 20 inches.

Hiland and similar soils are on gently sloping to strongly sloping foot slopes. These soils are very deep and well drained. They formed in alluvium derived from sandstone. The surface layer is moderately coarse textured. The upper part of the subsoil is moderately fine textured. The lower part and the substratum are moderately coarse textured.

Of minor extent in this unit are Samday soils and Rock outcrop on ridges and escarpments, and Briggsdale soils on dip slopes.

This unit is used mainly for livestock grazing and wildlife habitat. A few areas are used for irrigated hay and pasture or for homesite development.

If it is properly managed, this unit produces a good stand of vegetation suitable for livestock grazing. Production on the Sunup and similar soils is limited mainly by the available water capacity and depth.

The Bowbac and Hiland soils are well suited to irrigated hay and pasture. The Sunup and similar soils are poorly suited to irrigated hay and pasture because of the slope, depth to bedrock, and available water capacity.

The Hiland soils are moderately well suited to homesite development. Contamination of ground water supplies by septic systems is a concern if the density of housing is high. If the Bowbac soils are used for homesite development, the main limitation is the depth to bedrock. The slope is also a concern in the more sloping areas of the Hiland and Bowbac soils. If the Sunup and similar soils are used for homesite development, the main limitations are the depth to bedrock and the slope.

This unit provides winter and year-round habitat for pronghorn antelope and mule deer and year-round habitat for white-tailed deer. The area of this unit in the Bates Creek watershed provides crucial winter habitat for pronghorn antelope. In the Bolton Creek watershed this unit provides crucial winter habitat for mule deer. Also included are habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

WY325. Lolite-Cadoma-Arvada

Very shallow, shallow, moderately deep, and very deep, well drained, nearly level to steep soils on hills, ridges, and alluvial fans

Slope is 0 to 50 percent in areas of this unit. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 44 to 49 degrees F, and the average frost-free period is 110 to 130 days.

This unit is 30 percent Lolite and similar soils, 25 percent Cadoma and similar soils, and 15 percent Arvada and similar soils. The remaining 30 percent consists of components of minor extent.

Lolite and similar soils are on gently sloping to steep ridges and hills. These soils are very shallow or shallow and are well drained. They formed in residuum derived from sodic shale. These soils are fine textured throughout. Bedrock is at a depth of 6 to 20 inches. They are moderately saline.

Cadoma and similar soils are on gently sloping to moderately steep hills. These soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived from sodic shale. These soils have a moderately fine textured surface layer and a moderately fine textured or fine textured subsoil. Bedrock is at a depth of 20 to 40 inches. They are slightly saline to moderately saline.

Arvada and similar soils are on nearly level or gently sloping alluvial fans. These soils are very deep and well drained. They formed in alluvium derived from sodic shale. These soils have a medium textured surface layer and a fine textured subsoil. They are moderately saline or strongly saline and very strongly alkaline.

Of minor extent in this unit are Bowbac soils on hillslopes; Silhouette, Zigweid, and Keyner soils on alluvial fans; Taluce and Shingle soils on ridges; Haverdad and Clarkelen soils in drainageways; Rock outcrop on ridges and escarpments; badlands; and gullied land.

This unit is used mainly for livestock grazing and wildlife habitat. Production of vegetation suitable for livestock grazing is limited by the salinity and alkalinity of the soils. It is also limited by the depth and available water capacity of the Lolite and similar soils.

This unit provides winter and year-round habitat for pronghorn antelope and mule deer. The areas of this unit that occur in the South Fork of the Powder River, Bear Creek, Bolton Creek, and Stinking Creek watersheds provide crucial winter habitat for pronghorn antelope and mule deer. Also included are habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

WY326. Amodac-Keyner

Very deep, well drained, nearly level to strongly sloping soils on hillslopes

Slope is 0 to 12 percent in areas of this unit. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 44 to 49 degrees F, and the average frost-free period is 110 to 130 days.

This unit is 50 percent Amodac and similar soils and 30 percent Keyner and similar soils. The remaining 20 percent consists of components of minor extent.

Amodac and similar soils are on the gently sloping to strongly sloping convex portions of the hillslopes. These soils are very deep and well drained. They formed in slopewash alluvium and residuum derived from shale. These soils have a moderately coarse textured or a medium textured surface layer and a fine textured subsoil and substratum. The subsoil is slightly saline and strongly alkaline to very strongly alkaline. The substratum is moderately saline and very strongly alkaline.

Keyner and similar soils are on the nearly level to strongly sloping concave portions of the hillslopes. These soils are very deep and well drained. They formed in slopewash alluvium derived from sandstone. The surface layer is moderately coarse textured to medium textured. The subsoil is medium textured or moderately fine textured. The substratum is moderately coarse textured to medium textured. The lower part of the subsoil is slightly saline and very strongly alkaline. The substratum is moderately saline and very strongly alkaline.

Of minor extent in this unit are Arvada soils on alluvial fans; Bowbac, Hiland, and Sunup soils on dip slopes; Haverdad and Clarkelen soils in drainageways; Lolite soils on ridges and escarpments; and Rock outcrop on ridges and escarpments.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay and pasture.

Production of vegetation suitable for livestock grazing is limited mainly by the salinity and alkalinity of the soils.

If this unit is used for irrigated hay and pasture, the main limitations are the salinity and alkalinity of the soils and the slope.

This unit provides winter and year-round habitat for pronghorn antelope and year-round habitat for mule deer. Also included are habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

Rock Outcrop and Cool Soils on Uplands

This group consists of eight map units. The soils in this group are nearly level to very steep; shallow, moderately deep, and very deep; and are somewhat excessively drained or well drained. The average annual precipitation is 10 to 19 inches, the average annual air temperature is 37 to 43 degrees F, and the average frost-free period is 80 to 110 days.

This group is used mainly for livestock grazing and wildlife habitat.

WY214. Cathedral-Pesmore-Rock Outcrop

Shallow and moderately deep, well drained or somewhat excessively drained, strongly sloping to very steep soils and Rock outcrop on knolls and foothills

Slope is 10 to 55 percent in areas of this unit. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 37 to 42 degrees F, and the average frost-free period is 90 to 110 days.

This unit is 40 percent Cathedral and similar soils, 30 percent Pesmore and similar soils, and 10 percent Rock outcrop. The remaining 20 percent consists of components of minor extent.

Cathedral and similar soils are on strongly sloping to steep knolls. These soils are shallow and somewhat excessively drained. They formed in residuum derived from granite. These soils are moderately coarse textured throughout and contain many rock fragments. Bedrock is at a depth of 10 to 20 inches.

Pesmore and similar soils are on moderately steep to very steep knolls and foothills. These soils are moderately deep and well drained. They formed in residuum, slopewash alluvium, and colluvium derived from granite. The surface layer is moderately coarse textured and contains many rock fragments. The upper part of the subsoil is medium textured to moderately fine textured and contains many rock fragments. The lower part is medium textured and contains many rock fragments. Bedrock is at a depth of 20 to 40 inches.

Rock outcrop consists of exposed granite bedrock.

Of minor extent in this unit are Crago soils on foot slopes and very deep soils similar to the Pesmore soils in swales.

This unit is used mainly for livestock grazing and wildlife habitat. Production of vegetation suitable for livestock grazing is limited mainly by the available water capacity of both soils, the depth of the Cathedral and similar soils, and by the presence of Rock outcrop. Access by livestock is limited in areas with a slope of more than 30 percent.

This unit provides winter and year-round habitat for pronghorn antelope and mule deer. Also included are habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

WY255. Forelle-Poposhia-Diamondville

Moderately deep and very deep, well drained, gently sloping to strongly sloping soils on hillslopes, alluvial fans, plateaus, and in swales

Slope is 2 to 15 percent in areas of this unit. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 43 degrees F, and the average frost-free period is 90 to 110 days.

This unit is 30 percent Forelle and similar soils, 25 percent Poposhia and similar soils, and 20 percent Diamondville and similar soils. The remaining 25 percent consists of components of minor extent.

Forelle and similar soils are on gently sloping to moderately sloping alluvial fans, foot slopes, and plateaus. These soils are very deep and well drained. They formed in alluvium derived from various sources. The soils have a medium textured surface layer, a moderately fine textured upper part of the subsoil, and a medium textured or moderately fine textured lower part of the subsoil.

Poposhia and similar soils are in gently sloping to moderately sloping swales. These soils are very deep and well drained. They formed in alluvium derived from sandstone and shale. These soils have a medium textured surface layer and subsoil.

Diamondville and similar soils are on gently sloping to strongly sloping hillsides. These soils are moderately deep and well drained. They formed in alluvium and residuum derived from sandstone, siltstone, and shale. These soils have a moderately coarse textured surface layer, a medium textured or moderately fine textured upper part of the subsoil, and a medium textured lower part. Bedrock is at a depth of 20 to 40 inches.

Of minor extent in this unit are Bateson, Blazon, and Whiteriver soils.

This unit is used mainly for livestock grazing and wildlife habitat. It is well suited to livestock grazing.

The unit provides winter, summer, and year-round habitat for pronghorn antelope. It provides winter and year-round habitat for mule deer. Also included are habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

WY312. Rock River-Ryan Park

Very deep, well drained, nearly level to strongly sloping soils on alluvial fans, terraces, and hillslopes

Slope is 0 to 15 percent in areas of this unit. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 38 to 43 degrees F, and the average frost-free period is 90 to 110 days.

This unit is 50 percent Rock River and similar soils and 30 percent Ryan Park and similar soils. The remaining 20 percent consists of components of minor extent.

Rock River and similar soils are on nearly level to strongly sloping alluvial fans, terraces, and hillslopes. These soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is coarse textured or moderately coarse textured. The upper part of the subsoil is moderately fine textured. The lower part is moderately coarse textured or moderately fine textured.

Ryan Park and similar soils are on gently sloping to moderately sloping alluvial fans, terraces, and hillslopes. These soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is moderately coarse textured or coarse textured. The upper part of the subsoil is moderately coarse textured. The lower part is moderately coarse textured or coarse textured.

Of minor extent in this unit are Lupinto soils on steep slopes, Zeomont soils on stable dunes, shallow soils and Rock outcrop on ridges, and somewhat poorly drained or poorly drained soils in drainageways and basins.

This unit is used mainly for livestock grazing and wildlife habitat. It produces a good stand of vegetation suitable for livestock grazing if it is properly managed.

This unit provides winter, summer, and year-round habitat for pronghorn antelope. It provides winter and year-round habitat for mule deer. The area of this unit that occurs near Horse Creek, north of Pathfinder Reservoir, provides crucial winter habitat for pronghorn antelope. Also included are habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

WY313. Bosler-Lupinto-Cragosen

Shallow and very deep, well drained or somewhat excessively drained, nearly level to steep soils on terraces, hills, and terrace breaks

Slope is 1 to 45 percent in areas of this unit. The average annual precipitation is 10 to 14 inches, the average annual temperature is 37 to 43 degrees F, and the average frost-free period is 90 to 110 days.

This unit is 30 percent Bosler and similar soils, 30 percent Lupinto and similar soils, and 20 percent Cragosen and similar soils. The remaining 20 percent consists of components of minor extent.

Bosler and similar soils are on nearly level to strongly sloping terraces and foot slopes. These soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is moderately coarse textured. The upper part of the subsoil is moderately fine textured. The lower part is coarse textured and contains many rock fragments.

The Lupinto and similar soils are on moderately sloping to moderately steep hills and terrace breaks. These soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is moderately coarse textured to medium textured and contains a few rock fragments. The upper part of the subsoil is medium textured to moderately fine textured and contains many rock fragments. The lower part of the subsoil is moderately coarse textured to moderately fine textured and contains many rock fragments.

Cragosen and similar soils are on gently sloping to steep hills and terrace breaks. These soils are shallow and somewhat excessively drained. They formed in colluvium and residuum derived from various sources. The soils are moderately coarse textured to medium textured and contain many rock fragments. Bedrock is at a depth of 10 to 20 inches.

Of minor extent in this unit are Boettcher, Cushool, and Hawkstone soils on hills and Rock outcrop on ridges and escarpments.

This unit is used mainly for livestock grazing and wildlife habitat. Production of vegetation for livestock grazing is limited mainly by the available water capacity of the Lupinto, Cragosen, and similar soils, and by the depth of the Cragosen and similar soils.

This unit provides winter, summer, and year-round habitat for pronghorn antelope. It provides winter and year-round habitat for mule deer and elk. The area of this unit that occurs near the Rattlesnake Mountains provides crucial winter habitat for pronghorn antelope and also provides crucial winter and year-round habitat for mule deer. Also included are habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

WY314. Bateson-Whiteriver-Nunnston

Very deep, well drained, nearly level to strongly sloping soils on plateaus and alluvial fans

Slope is 0 to 15 percent in areas of this unit. The average annual precipitation is 10 to 19 inches, the average annual temperature is 37 to 43 degrees F, and the frost-free period is 80 to 110 days.

This unit is 30 percent Bateson and similar soils, 30 percent Whiteriver and similar soils, and 20 percent Nunnston and similar soils. The remaining 20 percent consists of components of minor extent.

Bateson and similar soils are on the nearly level or gently sloping slightly convex portions of the plateaus. These soils are very deep and well drained. They formed in eolian deposits overlying material derived from tuffaceous conglomerate. The surface layer is medium textured. The upper part of the subsoil is moderately fine textured. The lower part is moderately coarse textured and contains many rock fragments.

Whiteriver and similar soils are on the nearly level or gently sloping slightly concave portion of the plateaus. These soils are very deep and well drained. They formed in eolian deposits overlying material derived from tuffaceous siltstone. The surface layer is medium textured. The upper part of the subsoil is moderately fine textured or fine textured. The lower part is moderately fine textured or medium textured.

Nunnston soils and similar soils are on the gently sloping to strongly sloping alluvial fans and concave portions of the plateaus. These soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is medium textured. The upper part of the subsoil is moderately fine textured or fine textured. The lower part is moderately fine textured.

Of minor extent in this unit are Adel soils in swales at the base of steep hills; Cragosen and Lupinto soils on steep hills; Chalkcreek soils on terraces, foot slopes, and fans; Diamondville soils on strongly sloping hills; and somewhat poorly drained or poorly drained soils along springs and drainageways.

This unit is used mainly for livestock grazing and wildlife habitat. If it is properly managed, it produces a good stand of vegetation suitable for livestock grazing.

The unit provides winter, summer, and year-round habitat for pronghorn antelope. It provides winter and year-round habitat for mule deer. The area of this unit that occurs in the Bates Creek watershed provides crucial winter habitat for pronghorn antelope. Also included is habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

WY319. Cragosen-Chalkcreek-Rock Outcrop

Shallow and very deep, well drained or somewhat excessively drained, nearly level to steep soils and Rock outcrop on plateaus, hills, and alluvial fans

Slope is 0 to 45 percent in areas of this unit. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 37 to 43 degrees F, and the average frost-free period is 90 to 110 days.

This unit is 40 percent Cragosen and similar soils, 20 percent Chalkcreek and similar soils, and 20 percent Rock outcrop. The remaining 20 percent consists of components of minor extent.

Cragosen and similar soils are on strongly sloping to steep plateau breaks and hills. These soils are shallow and somewhat excessively drained. They formed in colluvium and residuum derived from various sources. These soils are moderately coarse textured or medium textured throughout and contain many rock fragments. Bedrock is at a depth of 10 to 20 inches.

Chalkcreek and similar soils are on nearly level to moderately sloping plateaus, foot slopes, and alluvial fans. These soils are very deep and well drained. They formed in alluvium derived from tuffaceous siltstone. These soils are medium textured throughout.

Rock outcrop consists mainly of exposed tuffaceous siltstone bedrock.

Of minor extent in this unit are Adel soils on plateaus, Delphill soils on hillslopes, badlands, and Rubble land.

This unit is used mainly for livestock grazing and wildlife habitat. Production of vegetation suitable for livestock grazing is limited mainly by the available water capacity and depth of the Cragosen and similar soils and by the presence of Rock outcrop.

This unit provides winter, summer, and year-round habitat for pronghorn antelope. The areas of this unit that occur in the Bates Creek and Stinking Creek watersheds provides crucial winter habitat for pronghorn antelope. The unit provides winter and year-round habitat for mule deer. In the Stinking Creek watershed, it provides crucial winter habitat for mule deer. Also included are habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

WY323. Neldore-Kather-Rock Outcrop

Shallow and moderately deep, well drained, moderately sloping to moderately steep soils and Rock outcrop on dip slopes, hills, and ridges

Slope is 6 to 30 percent in areas of this unit. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 39 to 43 degrees F, and the average frost-free period is 100 to 110 days.

This unit is 50 percent Neldore and similar soils, 20 percent Kather and similar soils, and 20 percent Rock outcrop. The remaining 10 percent consists of components of minor extent.

Neldore and similar soils are on strongly sloping to moderately steep hills and ridges. These soils are shallow and well drained. They formed in residuum and slopewash alluvium derived from shale. The soils are fine textured throughout. The depth to bedrock is 10 to 20 inches.

Kather and similar soils are on moderately sloping to strongly sloping dip slopes. These soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived from shale. The soils have a moderately fine textured surface layer and a fine textured subsoil. Bedrock is at a depth of 20 to 40 inches.

Rock outcrop consists of areas of hard and soft shale and bentonite bedrock.

Of minor extent in this unit are Arvada and Silhouette soils on alluvial fans, Haverdad and Clarkelen soils in drainageways, badlands, and Rubble land.

This unit is used mainly for livestock grazing and wildlife habitat. A few areas are used for bentonite mines.

The Kather soils are well suited to livestock grazing. Production of vegetation suitable for livestock grazing on the Neldore and similar soils is limited mainly by the available water capacity and depth.

If this unit is used for bentonite mines, the main limitation for reclamation is the thin layer of topsoil of the Neldore and similar soils.

This unit provides winter, summer, and year-round habitat for pronghorn antelope and mule deer and year-round habitat for white-tailed deer. The areas of this unit that occur in the Coal Creek and Little Red Creek watersheds provide crucial winter habitat for mule deer. Also included are habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

WY327. Rock River-Bosler-Cragosen

Shallow and very deep, well drained or somewhat excessively drained, nearly level to moderately steep soils on alluvial fans, terraces, hills, and plateaus

Slope is 0 to 30 percent in areas of this unit. The average annual precipitation is 10 to 14 inches, the average annual temperature is 37 to 43 degrees F, and the average frost-free period is 90 to 110 days.

This unit is 30 percent Rock River and similar soils, 30 percent Bosler and similar soils, and 20 percent Cragosen and similar soils. The remaining 20 percent consists of components of minor extent.

Rock River and similar soils are on nearly level to moderately steep alluvial fans, terraces, and hillslopes. These soils are very deep and well drained. They formed in alluvium derived from various sources. These soils have a moderately coarse textured surface layer, a moderately fine textured upper part of the subsoil, and a moderately coarse textured lower part.

Bosler and similar soils are on nearly level to strongly sloping terraces, plateaus, and foot slopes. These soils are very deep and well drained. They formed in alluvium derived from various sources. These soils have a moderately coarse textured surface layer, a moderately fine textured upper part of the subsoil, and a coarse textured lower part that contains many rock fragments.

Cragosen and similar soils are on gently sloping to moderately steep hills and terrace breaks. These soils are shallow and somewhat excessively drained. They formed in colluvium and residuum derived from various sources. The soils are moderately coarse textured to medium textured and contain many rock fragments. Bedrock is at a depth of 10 to 20 inches.

Of minor extent in this unit are Lupinto, Boettcher, Cushool, and Hawkstone soils on hillslopes and Rock outcrop on ridges and escarpments.

This unit is used mainly for livestock grazing and wildlife habitat. This unit is well suited to livestock grazing. Production of vegetation on the Cragosen soil, however, is limited by the available water capacity and soil depth.

This unit provides winter, summer, and year-round habitat for pronghorn antelope. It provides winter and year-round habitat for mule deer and elk. The area of this unit that occurs near the Rattlesnake Mountains provides crucial winter habitat for pronghorn antelope and also provides crucial winter and year-round habitat for mule deer. Also included are habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, Ord's kangaroo rat, desert cottontail, coyote, red fox, badger, and birds common to shrub steppes, grasslands, and prairies.

Rock Outcrop and Cold Soils on Mountains

This group consists of five map units. The soils in this group are gently sloping to very steep; very shallow, shallow, moderately deep, and very deep; and are well drained. The average annual precipitation is 15 to 35 inches, the average annual air temperature is 32 to 37 degrees F, and the average frost-free period is less than 90 days.

This group is used for summer livestock grazing, wildlife habitat, and recreation. A few areas are used for homesite development or for timber production.

WY090. Rock Outcrop-Starley-Woosley

Rock outcrop and very shallow to moderately deep, well drained, gently sloping to very steep soils on mountain slopes

Slope is 2 to 65 percent in areas of this unit. The average annual precipitation is 15 to 25 inches, the average annual air temperature is 32 to 37 degrees F, and the average frost-free period is less than 80 days.

This unit is 30 percent Rock outcrop, 30 percent Starley and similar soils, and 20 percent Woosley and similar soils. The remaining 20 percent consists of components of minor extent.

Rock outcrop consists mainly of exposures of limestone bedrock.

Starley and similar soils are on gently sloping to very steep mountain slopes. These soils are very shallow or shallow and are well drained. They formed in residuum derived from limestone. These soils are medium textured throughout and contain many rock fragments. Bedrock is at a depth of 7 to 20 inches.

Woosley and similar soils are on gently sloping to strongly sloping mountain foot slopes. These soils are moderately deep and well drained. They formed in alluvium and residuum derived from limestone. These soils have a medium textured surface layer and a moderately fine textured subsoil. Bedrock is at a depth of 20 to 40 inches.

Of minor extent in this unit are Clayburn, Bachus, and Farlow soils and Rubble land.

This unit is used mainly for summer livestock grazing and wildlife habitat. This unit is moderately well suited to livestock grazing. Steep slopes limit access by livestock. Production of vegetation suitable for livestock grazing on the Starley soils is limited mainly by the available water capacity and the depth of the soils.

This unit provides summer habitat for mule deer and elk. This unit also provides crucial winter habitat for elk. Also included are habitat for such species as black bear, yellow-bellied marmot, red squirrel, bobcat, coyote, red fox, and birds common to shrub steppes.

WY329. Alflack-Grimstone-Irson

Very shallow to moderately deep, well drained, gently sloping to very steep soils on mountain slopes and mountain crests

Slope is 4 to 65 percent in areas of this unit. The average annual precipitation is 15 to 35 inches, the average annual air temperature is 32 to 36 degrees F, and the frost-free period is less than 90 days. Frost commonly occurs during summer months.

This unit is 35 percent Alflack and similar soils, 20 percent Grimstone and similar soils, and 15 percent Irson and similar soils. The remaining 30 percent consists of components of minor extent.

Alflack and similar soils are on gently sloping to moderately steep mountain slopes. These soils are moderately deep and well drained. They formed in residuum derived from sandstone. These soils have a coarse textured or moderately coarse textured surface layer that contains a few rock fragments. The underlying material is coarse textured and contains many rock fragments. Bedrock is at a depth of 20 to 40 inches.

Grimstone and similar soils are on gently sloping to steep mountain slopes. These soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived from crystalline rock. The surface layer is medium textured. The subsoil is moderately fine textured. Bedrock is at a depth of 20 to 40 inches.

Irson and similar soils are on moderately sloping to very steep mountain slopes and mountain crests. These soils are very shallow or shallow and ae well drained. They formed in colluvium and residuum derived from granite. They are moderately fine textured throughout and contain many rock fragments. Bedrock is at a depth of 8 to 20 inches.

Of minor extent in this unit are Chincap and Sneffels soils on dip slopes, Farlow and Sebud soils on steep mountainsides, Moslander soils adjacent to streams and springs, and Rock outcrop on ridges and escarpments.

This unit is used mainly for summer livestock grazing, wildlife habitat, recreation, homesite development, or for timber production.

Production of vegetation suitable for livestock grazing is limited mainly by the dense tree canopy cover on the Alflack, Grimstone, and similar soils and by the available water capacity and depth of the Irson and similar soils.

The main limitations for homesite development are the depth to bedrock and the slope.

Stands of timber occur on the Alflack, Grimstone, and similar soils. Timber production is limited mainly by the cold climate and short growing season. It is also limited by the rooting depth of both soils and by the available water capacity of the Alflack and similar soils.

This unit provides summer habitat for mule deer and year-round habitat for elk. Also included is habitat for such species as black bear, yellow-bellied marmot, red squirrel, coyote, bobcat, red fox, and birds common to shrub steppes and conifer forests.

WY330. Hazton-Sebud-Rock Outcrop

Shallow and very deep, well drained, strongly sloping to very steep soils and Rock outcrop on mountain slopes, canyon sides, and ridges

Slope is 10 to 65 percent in areas of this unit. The average annual precipitation is 15 to 25 inches, the average annual air temperature is 32 to 36 degrees F, and the frost-free period is less than 90 days.

This unit is 35 percent Hazton and similar soils, 20 percent Sebud and similar soils, and 15 percent Rock outcrop. The remaining 30 percent consists of components of minor extent.

Hazton and similar soils are on strongly sloping to steep mountain ridges. These soils are shallow and well drained. They formed in residuum derived from granite. These soils are moderately coarse textured throughout and contain many rock fragments. Bedrock is at a depth of 10 to 20 inches.

Sebud and similar soils are on steep to very steep mountain slopes and canyon sides. These soils are very deep and well drained. They formed in colluvium derived from granite. These soils are medium textured throughout and contain many rock fragments.

Rock outcrop consists mainly of granite bedrock exposed on ridges, ledges, and escarpments.

Of minor extent in this unit are Adel and Pagosa soils in valleys, Ulrant and Nunnston soils on foot slopes, and Typic Haplaquolls in swales and drainageways.

This unit is used mainly for summer livestock grazing and wildlife habitat. A few areas are used for homesite development or for timber production.

Production of vegetation suitable for livestock grazing is limited mainly by the tree canopy cover on the Sebud and similar soils, by the available water capacity and depth of the Hazton and similar soils, and by the presence of Rock outcrop.

If this unit is used for homesite development, the limitations are the slope and the high content of large rock fragments. The depth to bedrock is also a limitation on the Irson and similar soils.

Stands of timber occur on the Sebud and similar soils. Timber production is limited by the slope, content of stones, slow regrowth caused by the cold climate, short growing season, and the available water capacity of the soil.

This unit provides summer habitat for mule deer and elk. The area of this unit that occur in the Deer Creek watershed and the area adjacent to the Medicine Bow National Forest provide crucial winter habitat for elk. Also included are habitat for such species as black bear, yellow-bellied marmot, red squirrel, bobcat, coyote, red fox, and birds common to shrub steppes and conifer forests.

WY377. Clayburn-Chittum-Rock Outcrop

Shallow and very deep, well drained, gently sloping to steep soils and Rock outcrop on mountain slopes, dip slopes, and alluvial fans

Slope is 20 to 40 percent in areas of this unit. The average annual precipitation is 15 to 19 inches, the average annual air temperature is 32 to 37 degrees F, and the average frost-free period is less than 90 days. Frost commonly occurs during summer months.

This unit is 30 percent Clayburn and similar soils, 30 percent Chittum and similar soils, and 20 percent Rock outcrop. The remaining 20 percent consists of components of minor extent.

Clayburn and similar soils are on gently sloping to strongly sloping foot slopes and alluvial fans. These soils are very deep and well drained. They formed in alluvium derived from sandstone. These soils have a medium textured surface layer, a moderately fine textured subsoil, and a medium textured or moderately coarse textured substratum.

Chittum and similar soils are on gently sloping to steep mountainsides and dip slopes. These soils are shallow and well drained. They formed in residuum and alluvium derived from sandstone. These soils have a medium textured surface layer and a medium textured or moderately fine textured subsoil. Bedrock is at a depth of 10 to 20 inches.

Rock outcrop consists mainly of exposures of sandstone bedrock.

Of minor extent in this unit are Moslander soils adjacent to streams and springs, Pagosa and Farlow soils on dip slopes, and Rubble land.

This unit is used mainly for summer livestock grazing and wildlife habitat. This unit is moderately well suited to livestock grazing. Production of vegetation suitable for livestock grazing on the Chittum soils is limited mainly by the available water capacity and the soil depth. Steep slopes limit access by livestock in some areas.

This unit provides summer habitat for pronghorn antelope and mule deer and year-round habitat for elk. Also included is habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, red squirrel, yellow-bellied marmot, desert cottontail, porcupine, coyote, red fox, badger, and birds common to shrub steppes.

WY378. Bachus-Farlow-Starley

Very shallow to very deep, well drained, gently sloping to very steep soils on mountain slopes, mountain crests, and dip slopes

Slope is 4 to 65 percent in areas of this unit. The average annual precipitation is 15 to 25 inches, the average annual air temperature is 32 to 37 degrees F, and the average frost-free period is less than 80 days. Frost commonly occurs during summer months.

This unit is 30 percent Bachus and similar soils, 30 percent Farlow and similar soils, and 20 percent Starley and similar soils. The remaining 20 percent consists of components of minor extent.

Bachus and similar soils are on gently sloping to moderately steep mountain dip slopes. These soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived from quartzitic sandstone. These soils have a medium textured surface layer and a medium textured to moderately fine textured subsoil and substratum. Bedrock is at a depth of 20 to 40 inches.

Farlow and similar soils are on moderately steep to steep mountain slopes below escarpments and ridges. These soils are very deep or deep and are well drained. They formed in colluvium derived from limestone and sandstone. These soils are medium textured throughout and contain many rock fragments.

Starley and similar soils are on moderately sloping to very steep mountain slopes and mountain crests. These soils are very shallow or shallow and are well drained. They formed in residuum derived from limestone. These soils are medium textured throughout and contain many rock fragments. Bedrock is at a depth of 7 to 20 inches.

Of minor extent in this unit are Clayburn soils in valleys and swales, Moslander soils adjacent to streams and springs, Pagosa soils on dip slopes, Rock outcrop on ridges and escarpments, and Rubble land.

This unit is used mainly for summer livestock grazing and wildlife habitat. A few areas of the Farlow soils are used for timber production.

Production of vegetation suitable for livestock grazing is limited mainly by the available water capacity of the Farlow and Starley soils, and by the depth of the Starley soils. In areas of the Farlow soils with a dense stand of ponderosa pine, production is limited by the dense tree canopy cover which limits understory plant growth.

Areas of the Farlow soils with stands of timber are

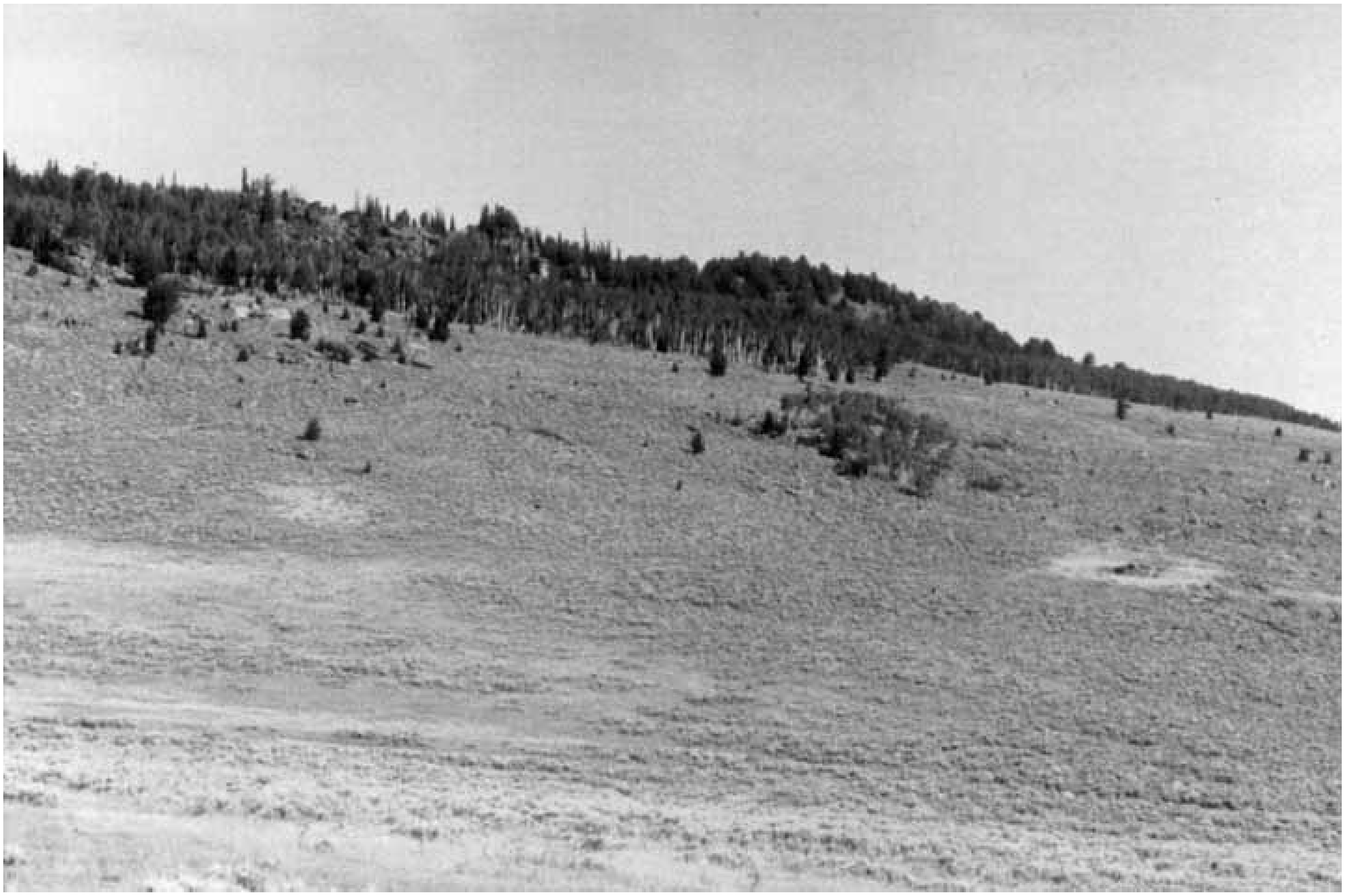

Figure 2.—An area of the Bachus-Farlow-Starley general soil map unit. Because of the diversity of terrain and vegetation, this unit provides excellent wildlife habitat.

moderately well suited to timber production. Regrowth of timber stands is limited by the cold climate and short growing season. Productivity is also limited by the available water capacity of the soil. Slope limits timber harvesting in the very steep areas.

This unit provides summer habitat for pronghorn antelope and mule deer and year-round habitat for elk (fig. 2). Also included is habitat for such species as white-tailed jackrabbit, thirteen-lined ground squirrel, red squirrel, yellow-bellied marmot, desert cottontail, porcupine, coyote, red fox, badger, and birds common to shrub steppes and conifer forests.

Detailed Soil Map Units

The map units delineated on the detailed maps at the back of this survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this section, along with the maps, can be used to determine the suitability and potential of a unit for specific uses. They also can be used to plan the management needed for those uses. More information about each map unit is given under the heading "Use and Management of the Soils."

A map unit delineation on a map represents an area dominated by one or more major kinds of soils or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils or miscellaneous areas. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils and miscellaneous areas are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some "included" areas that belong to other taxonomic classes.

Most included soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, inclusions. They may or may not be mentioned in the map unit description. Other included soils and miscellaneous areas, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, inclusions. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. The included areas of contrasting soils or miscellaneous areas are mentioned in the map unit descriptions. A few included areas may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of included areas in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into segments that have similar use and management requirements. The delineation of such landscape segments on the map provides sufficient information for the development of resource plans, but if intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives the principal hazards and limitations to be considered in planning for specific uses.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in the texture of the surface layer or of the underlying layers, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in the texture of the surface layer or of the underlying layers. They also can differ in slope, stoniness, salinity, wetness, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Hi Land sandy loam, 0 to 6 percent slopes, is a phase of the Hi Land series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes or associations.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Bowbac-Hi Land-Wolf complex, 3 to 15 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Boiler-Hiland association, rolling, is an example.

This survey includes *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Badland is an example.

Table 4 gives the acreage and proportionate extent of each map unit. Other tables (see "Summary of Tables") give properties of the soils and the limitations, capabilities, and potentials for many uses. The Glossary defines many of the terms used in describing the soils or miscellaneous areas.

Map Unit Descriptions

101—Absher loam, 0 to 3 percent slopes

These very deep, well drained soils are on low terraces. They formed in alluvium derived dominantly from sodic shale. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 6,200 feet. The average annual precipitation is 10 to 14 inches, the average annual air temperature is 41 to 43 degrees F, and the average frost-free period is 100 to 110 days.

The surface layer is typically very pale brown loam 3 inches thick. The upper 16 inches of the subsoil is pale brown, very strongly alkaline silty clay. The lower part of the subsoil, to a depth of 60 inches or more, is pale brown, strongly alkaline silty clay loam.

Included in this unit are small areas of Tisworth sandy loam and Slickspots. Included areas make up 15 percent of the total acreage.

Permeability of the Absher soils is very slow. Available water capacity is moderate. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate. These soils are subject to a rare hazard of flooding.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly alkali sacaton, basin wildrye, western wheatgrass, inland saltgrass, and black greasewood. As the range condition deteriorates, inland saltgrass and greasewood increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,800 pounds of air-dry vegetation in normal years. Production ranges from 2,500 pounds in favorable years to 1,200 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity and alkalinity of the soils. Proper management of livestock grazing helps to protect the unit from excessive erosion. Loss of the surface layer results in a severe decrease in productivity and in the potential of the unit to produce plants suitable for grazing.

This map unit is in capability subclass VIIs, nonirrigated. It is in the Saline Lowland, 10 to 14 inch ppt., High Plains Southeast range site.

102—Adel-Pagosa association, rolling

This map unit is in narrow mountain valleys. The slope is 4 to 15 percent. The native vegetation is mainly grasses, forbs, and trees. Elevation is 7,200 to 7,700 feet. The annual precipitation is 20 to 30 inches, the average annual air temperature is 35 to 38 degrees F, and the frost-free period is less than 90 days. Frost commonly occurs during summer months.

This unit is 60 percent Adel loam and 20 percent Pagosa loam. The Adel soils are on the grass parks of the valleys with 4 to 15 percent slopes, and the Pagosa soils support aspen and are in pockets and narrow bands with 4 to 10 percent slopes.

Included in this unit are 10 percent Hazton gravelly sandy loam on knolls and 10 percent Moslander loam in gently sloping drainageways, in swales, and adjacent to springs.

The Adel soils are very deep and well drained. The soils formed in slopewash alluvium and colluvium derived from various sources. The upper 5 inches of the surface layer is typically dark grayish brown loam. The lower part of the surface layer is dark brown clay loam 16 inches thick. The underlying material, to a depth of 60 inches or more, is pale brown clay loam.

Permeability of the Adel soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Pagosa soils are deep and well drained. They formed in slopewash alluvium and colluvium derived from various sources. The surface layer is typically dark grayish brown loam 5 inches thick. The subsurface layer is pale brown loam 8 inches thick. The next layer is pale brown and brown clay loam 7 inches thick. The subsoil is yellowish brown clay 19 inches thick. The substratum is light brownish gray stony clay loam 11 inches thick. Hard fractured granite is at a depth of 50 inches.

Permeability of the Pagosa soils is slow. Available water capacity is high. The effective rooting depth is 40 to 60 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Adel soils are used mainly for livestock grazing and wildlife habitat. The Pagosa soils are used mainly for wildlife habitat. A few areas of the Pagosa soils which have an aspen tree cover are also used for livestock grazing. A few areas of the Pagosa soils are used for firewood production.

The potential plant community on the Adel soils is mainly bluebunch wheatgrass, Idaho fescue, prairie junegrass, Griffith wheatgrass, and Columbia needlegrass. As the range condition deteriorates, blue grama, threadleaf sedge, big sagebrush, and rabbitbrush increase in abundance. As the range condition further deteriorates, broom snakeweed, pricklypear, annual grasses, and annual forbs invade. The potential plant community produces about 1,500 pounds of air-dry vegetation in normal years. Production ranges from 2,000 pounds in favorable years to 800 pounds in unfavorable years. These soils are only moderately suited to livestock watering ponds because of the slope.

The potential plant community on the Pagosa soils is mainly lodgepole pine and Douglas-fir with an understory of Idaho fescue and pine grass. Quaking aspen is a part of the present plant community in some areas. Production of vegetation suitable for livestock grazing is limited mainly by the tree canopy cover, which limits the understory growth.

The Pagosa soils are moderately well suited to the production of lodgepole pine. The site index for lodgepole pine ranges from 60 to 70. The main limitation in producing and harvesting timber is slow regrowth. After harvesting reforestation must be carefully managed to reduce competition from undesirable understory plants.

This map unit is in capability subclass VIe, nonirrigated.

The Adel soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. The Pagosa soils are in Lodgepole Pine Woodland site. Inclusions of Hazton soils are in the Shallow Igneous, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Moslander soils are in the Subirrigated, 15 to 19 inch ppt., Foothills and Mountains Southeast range site.

103—Alcova-Rock River sandy loams, 0 to 10 percent slopes

This map unit is on terraces and alluvial fans. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,700 to 7,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 38 to 41 degrees F, and the frost-free period is 90 to 110 days.

This unit is 50 percent Alcova sandy loam and 30 percent Rock River sandy loam. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Cushool sandy loam, Edlin fine sandy loam, Forelle loam, and Worfstone sandy loam. Included areas make up 20 percent of the total acreage.

The Alcova soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically light yellowish brown sandy loam 2 inches thick. The upper part of the subsoil is yellowish brown sandy clay loam 11 inches thick. The next 12 inches is very pale brown gravelly sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown very gravelly loam.

Permeability of the Alcova soils is moderate. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Rock River soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically brown sandy loam 2 inches thick. The upper 11 inches of the subsoil is yellowish brown sandy clay loam. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown fine sandy loam. In some areas the surface layer is loamy sand.

Permeability of the Rock River soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly needleandthread, thickspike wheatgrass, Indian ricegrass, threadleaf sedge, and big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. This unit is poorly suited to livestock watering ponds because of the seepage potential.

This map unit is in capability subclass IVe, nonirrigated.

The Alcova and Rock River soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Cushool, Edlin, and Worfstone soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Forelle soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

104—Alcova-Stunner complex, 3 to 15 percent slopes

This map unit is on terraces dissected by draws. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 7,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 39 to 43 degrees F, and the frost-free period is 90 to 110 days.

This unit is 45 percent Alcova sandy loam and 40 percent Stunner loam. The Alcova soils are on convex slopes, and the Stunner soils are on concave slopes. The components of this unit are so intricately intermingled it was not practical to map them separately.

Included in this unit are small areas of Brownsto gravelly loam on low ridges and draw side slopes; Cragosen gravelly loam on draw side slopes; Forelle loam on alluvial fans; and Worfstone sandy loam on small buttes. Included areas make up 15 percent of the total acreage.

The Alcova soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically pale brown sandy loam 4 inches thick. The upper 12 inches of the subsoil is dark yellowish brown sandy clay loam. The next 16 inches is yellowish brown very gravelly loam. The lower part of the subsoil, to a depth of 60 inches or more, is light brownish gray very gravelly sand. In some areas the surface layer is loam.

Permeability of the Alcova soils is moderate in the upper part of the subsoil and rapid in the lower part. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Stunner soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically brown loam 4 inches thick. The upper 13 inches of the subsoil is yellowish brown clay loam. The next 31 inches is pale brown and light yellowish brown loam. The lower part of the subsoil, to a depth of 60 inches or more, is light yellowish brown coarse sand. In some areas the surface layer is sandy loam.

Permeability of the Stunner soils is moderate in the upper part of the subsoil and rapid in the lower part of the subsoil. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, bluebunch wheatgrass, mutton bluegrass, needleandthread, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. This unit is poorly suited to livestock watering ponds because of the seepage potential.

This map unit is in capability subclass IVe, nonirrigated.

The Alcova and Stunner soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Brownsto and Cragosen soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Forelle soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Worfstone soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

105—Alflack-Foxton complex, 4 to 25 percent slopes

This map unit is on mountain slopes. The native vegetation is mainly trees, grasses, and shrubs. Elevation is 7,700 to 8,100 feet. The annual precipitation is 25 to 35 inches, the annual air temperature is 32 to 36 degrees F, and the frost-free period is less than 70 days. Frost commonly occurs during summer months.

This unit is 60 percent Alflack loamy fine sand and 25 percent Foxton fine sandy loam. The Alflack soils are on convex and plane slopes of 4 to 25 percent, and the Foxton soils are on concave and plane slopes of 4 to 10 percent. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent very deep loamy fine sand soils in swales and 5 percent shallow fine sand soils in meadows.

The Alflack soils are moderately deep and well drained. They formed in residuum derived dominantly from sandstone. The surface is typically covered with a 1-inch-thick layer of slightly decomposed pine needles and other forest litter. The surface layer is light brownish gray loamy fine sand 2 inches thick. The underlying material is brownish yellow very channery loamy fine sand 20 inches thick. Fractured sandstone is at a depth of 22 inches.

Permeability of the Alflack soils is rapid. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The Foxton soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived from sandstone and limestone. The surface is typically covered with a 2-inch-thick layer of slightly decomposed pine needles and other forest litter. The surface layer is brown fine sandy loam 3 inches thick. The subsurface layer is light yellowish brown cobbly loam 9 inches thick. The subsoil is yellowish brown cobbly clay 22 inches thick. Hard fine grained sandstone is at a depth of 34 inches.

Permeability of the Foxton soils is slow. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used for wildlife habitat, livestock grazing, timber production, or for homesite development.

The potential plant community on the Alflack soils is mainly lodgepole pine with an understory of spike fescue and Oregongrape. The potential plant community on the Foxton soils is mainly lodgepole pine and subalpine fir with an understory of Oregongrape. In some areas the present vegetation includes aspen. Production of vegetation suitable for livestock grazing is limited mainly by the tree canopy cover, which limits the understory growth.

The Alflack soils are moderately well suited to the production of lodgepole pine. The site index for lodgepole pine ranges from 45 to 55. The Foxton soils are moderately well suited to the production of lodgepole pine. The site index for lodgepole pine ranges from 55 to 65. The main concern in producing and harvesting timber is slow regrowth due to the cold climate and short growing season. The available water capacity of the Alflack soils also limits productivity. After trees are harvested, reforestation must be carefully managed to reduce competition from undesirable understory plants. Trees are subject to windthrow because of the limited rooting depth.

If this unit is used for homesite development, the main limitations are the depth to bedrock, slope, and the large stones in areas of the Alflack soils and the depth to bedrock, restricted permeability, and the shrink-swell potential in areas of the Foxton soils. Installation of septic tank absorption lines in or on the bedrock is not recommended due to the possibility of inadequate filtration and contamination of ground water supplies. Effluent from septic tank absorption fields can surface in downslope areas and thus create a hazard to health. Septic tank absorption fields of conventional size do not function properly in the Foxton soils due to the restricted permeability. The slope is a concern in installing septic tank absorption fields. Absorption lines should be installed on the contour. If buildings are constructed on the Foxton soils, properly designed foundations and footings and runoff diverted away from the buildings help to prevent the structural damage caused by shrinking and swelling.

This map unit is in capability subclass VIs, nonirrigated.

The Alflack and Foxton soils are in woodland sites. Inclusions of very deep loamy fine sand soils are in a woodland site. Inclusions of shallow fine sand soils are in the Very Shallow, 20+inch ppt., Mountains range site.

106—Alflack-Irson-Foxton Variant complex, 3 to 20 percent slopes

This map unit is on mountains. The native vegetation is mainly grasses, forbs, shrubs, and conifers. Elevation is 7,200 to 8,300 feet. The annual precipitation is 25 to 35 inches, the annual air temperature is 33 to 36 degrees F, and the average frost-free period is less than 90 days. Frost commonly occurs during summer months.

This unit is 55 percent Alflack flaggy sandy loam, 15 percent Irson very gravelly loam, and 15 percent Foxton Variant loam. The Alflack soils are on mountainsides with 6 to 15 percent slopes, the Irson soils are on mountain crests with 6 to 20 percent slopes, and the Foxton Variant soils are on foot slopes with 3 to 8 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Adel loam in aspen groves and Rock outcrop on mountain crests and ledges. Also included are a few areas with slopes steeper than 20 percent. Included areas make up 15 percent of the total acreage.

The Alflack soils are moderately deep and well drained. They formed in residuum derived dominantly from sandstone. The surface is typically covered with a 1-inch-thick layer of slightly decomposed pine needles and other forest litter. The surface layer is grayish brown flaggy sandy loam 2 inches thick. The upper 12 inches of the underlying material is light gray very flaggy loamy sand. The lower 12 inches is pale brown very flaggy loamy sand. Fractured sandstone bedrock is at a depth of 26 inches.

Permeability of the Alflack soils is rapid. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is slow and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

The Irson soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from conglomerate. The surface layer is typically pale brown very gravelly loam 3 inches thick. The underlying material is pale brown very gravelly loam 5 inches thick. Hard conglomerate is at a depth of 8 inches. The Irson soils have lighter colors than is allowed for the Irson series, but this difference does not significantly affect the use or behavior of the soils.

Permeability of the Irson soils is moderate. Available water capacity is very low. The effective rooting depth is 8 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Foxton Variant soils are deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone and conglomerate. The surface is typically covered with a 1-inch-thick layer of partially decomposed pine needles and other forest litter. The surface layer is brown loam 2 inches thick. The upper 5 inches of the subsurface layer is very pale brown very fine sandy loam. The lower 21 inches is very pale brown very fine sandy loam and yellowish brown loam. The subsoil is brown clay loam 18 inches thick. Hard sandstone bedrock is at a depth of 46 inches.

Permeability of the Foxton Variant soils is moderate. Available water capacity is high. The effective rooting depth is 40 to 50 inches. Runoff is slow and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Alflack and Foxton soils are used mainly for wildlife habitat or for timber production. The Irson soils are used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Alflack soils is mainly lodgepole pine, pine grass, and Oregongrape. Production of vegetation suitable for livestock grazing is limited mainly by the tree canopy cover, which limits the understory growth.

The potential plant community on the Irson soils is mainly bluebunch wheatgrass, Idaho fescue, slimstem muhly, and threetip sagebrush. The potential plant community produces about 900 pounds of air-dry vegetation per acre in normal years. Production ranges from 1,200 pounds in favorable years to 600 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils and the depth to bedrock.

The potential plant community on the Foxton Variant soils is mainly lodgepole pine with an understory of Idaho fescue, spike trisetum, and pine grass. Production of vegetation suitable for livestock grazing is limited mainly by the tree canopy cover, which limits the understory growth.

The Alflack soils are moderately well suited to the production of lodgepole pine. The site index for lodgepole pine ranges from 45 to 50. The Foxton Variant soils are well suited to the production of lodgepole pine. The site index for lodgepole pine ranges from 60 to 70. The main concern in producing and harvesting timber is slow regrowth due to the cold climate and short growing season. The available water capacity of the Alflack soils also limits productivity. After trees are harvested, reforestation must be carefully managed to reduce competition from undesirable understory plants. Trees are subject to windthrow because of the limited rooting depth.

The Alflack soils are in capability subclass VIs, nonirrigated; the Irson soils are in capability subclass VIIs, nonirrigated; and the Foxton Variant soils are in capability subclass VIe, nonirrigated.

The Alflack and Foxton Variant soils are in a woodland site. The Irson soils are in the Shallow Igneous, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Adel soils are in a woodland site.

107—Almy loam, 3 to 15 percent slopes

These very deep, well drained soils are on hillslopes. They formed in slopewash alluvium derived dominantly from sandstone and shale. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 7,100 to 7,400 feet. The annual precipitation is 12 to 14 inches, the annual air temperature is 38 to 40 degrees F, and the average frost-free period is 90 to 100 days.

The surface layer is typically reddish brown loam 3 inches thick. The upper part of the subsoil is reddish brown loam 9 inches thick. The next 10 inches is reddish brown clay loam. The lower 13 inches of the subsoil is light reddish brown loam. The substratum is light reddish brown loam to a depth of 60 inches or more.

Included in this unit are 10 percent Fiveoh loam on convex slopes, 10 percent Thermopolis loam on hill crests, and 5 percent moderately deep soils similar to the Almy soils.

Permeability of the Almy soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, mutton bluegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. This unit is moderately suited to livestock watering ponds because of the seepage potential and slope.

This map unit is in capability subclass VIe, nonirrigated.

The Almy soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Fiveoh and moderately deep soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Thermopolis soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

108—Amodac loam, 2 to 12 percent slopes

These very deep, well drained soils are on hillslopes. They formed in slopewash alluvium and residuum derived dominantly from sodic shale. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,800 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 120 to 130 days.

The surface layer is typically pale brown loam 3 inches thick. The upper 8 inches of the subsoil is pale brown, slightly saline loam. The lower 15 inches of the subsoil is pale brown, very strongly alkaline, slightly saline clay loam. The substratum, to a depth of 60 inches or more, is pale brown, very strongly alkaline, moderately saline clay loam.

Included in this unit are 5 percent Keyner loam and 5 percent Petrie clay loam on concave slopes.

Permeability of the Amodac soils is moderately slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat. A few areas are used for irrigated hay and pasture.

The potential plant community on these soils are mainly western wheatgrass, needleandthread, prairie junegrass, bluebunch wheatgrass, birdfoot sagebrush, and gardner saltbush. As the range condition deteriorates, birdfoot sagebrush and prairie junegrass increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 700 pounds of air-dry vegetation in normal years. Production ranges from 900 pounds in favorable years to 500 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the alkalinity and salinity of the soils. Loss of the surface layer results in a severe decrease in productivity and in the potential of the unit to produce plants suitable for grazing.

If this unit is used for irrigated hay and pasture, the main limitations are the salinity and alkalinity of the soils. The slope is also a concern in the more sloping areas. To maximize production species of plants that tolerate saline and alkaline soils should be planted. Irrigation water should be applied at a rate that ensures optimum production without excessive deep percolation. Deep percolation of irrigation water can cause saline seeps downslope. Applications of irrigation water should be adjusted to the available water capacity and water intake rate of the soils and the crop needs. Sprinkler irrigation is the most suitable method of applying water. Although not as efficient or effective, the contour ditch method can be used if the ditches are designed to adequately apply the water without excessive deep percolation.

This map unit is in capability subclass VIs, irrigated and nonirrigated.

The Amodac soils are in the Saline Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Keyner soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Petrie soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site.

109—Amodac-Keyner complex, 2 to 12 percent slopes

This map unit is on hillslopes. The native vegetation is mainly grasses. Elevation is 5,300 to 6,100 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 50 percent Amodac fine sandy loam and 40 percent Keyner sandy clay loam. The Amodac soils are on convex slopes, and the Keyner soils are on concave slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are Arvada clay loam on alluvial fans and Orella clay loam on hill crests. Also included are small areas of Rock outcrop on hillslopes. Included areas make up 10 percent of the total acreage.

The Amodac soils are very deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sodic shale. The surface layer is typically pale brown fine sandy loam 4 inches thick. The upper 3 inches of the subsoil is yellowish brown, slightly saline sandy clay loam; the next 8 inches is light brownish gray, strongly alkaline, slightly saline loam; and the lower 11 inches of the subsoil is light brownish gray, very strongly alkaline, slightly saline sandy clay loam. The substratum, to a depth of 60 inches or more, is grayish brown, very strongly alkaline, moderately saline sandy clay loam. In some areas the surface layer is sandy clay loam, loam, or clay loam.

Permeability of the Amodac soils is moderately slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Keyner soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from sodic shale. The surface layer is typically grayish brown sandy clay loam 2 inches thick. The upper 11 inches of the subsoil is grayish brown clay loam. The lower 10 inches of the subsoil is light grayish brown, very strongly alkaline, slightly saline clay loam. The substratum, to a depth of 60 inches or more, is light grayish brown, very strongly alkaline, moderately saline sandy clay loam. In some areas the surface layer is sandy loam.

Permeability of the Keyner soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Amodac soils is mainly western wheatgrass, needleandthread, prairie junegrass, bluebunch wheatgrass, birdfoot sagebrush, and gardner saltbush. As the range condition deteriorates, birdfoot sagebrush and prairie junegrass increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 700 pounds of air-dry vegetation in normal years. Production ranges from 900 pounds in favorable years to 500 pounds in unfavorable years. The production of vegetation suitable for livestock grazing on the Amodac soils is limited by the salinity and alkalinity. Loss of the surface layer results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for livestock grazing.

The potential plant community on the Keyner soils is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, and big sagebrush. The potential plant community produces about 1,100 pounds of air-dry vegetation per acre. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. Loss of the surface layer results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for grazing.

The Amodac soils are in capability subclass VIs, nonirrigated. The Keyner soils are in capability subclass IVs, nonirrigated.

The Amodac soils are in the Saline Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Keyner soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Orella and Arvada soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site.

110—Aquic Ustifluvents, saline, 0 to 3 percent slopes

These very deep, somewhat poorly drained soils are on flood plains and in basins. They formed in alluvium derived from sedimentary rocks. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,200 to 6,500 feet. The annual precipitation is 7 to 14 inches, the annual air temperature is 42 to 49 degrees F, and the frost-free period is 110 to 130 days.

These soils are highly stratified to a depth of 60 inches or more. Texture throughout the profile ranges from clay to loamy sand. The soils commonly are strongly saline and strongly alkaline or very strongly alkaline. The physical and chemical properties of these soils vary greatly within short distances. Onsite evaluations are necessary to determine the limitations of these soils for specific uses. Most uses are limited by the wetness, flooding, salinity, and alkalinity of the soils.

Included in this unit are small areas of Arvada fine sandy loam on alluvial fans, Draknab loamy sand in slightly elevated areas, and Slickspots in microbasins. Included areas make up 30 percent of the total acreage.

Permeability of the Aquic Ustifluvents is slow to rapid. Available water capacity is low. The effective rooting depth is 60 inches or more for plants that can tolerate wet, saline, and alkaline soils, but it is 12 to 24 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. A water table is at a depth of 12 to 24 inches from April through June and is at a depth of 20 to 40 inches the remainder of the year. These soils are subject to occasional, brief periods of flooding in spring and early summer.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay and pasture.

The potential plant community on this unit is mainly alkali sacaton, basin wildrye, alkali bluegrass, and greasewood. As the range condition deteriorates, inland saltgrass and greasewood increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 3,000 pounds of air-dry vegetation in normal years. Production ranges from 3,400 pounds in favorable years to 2,500 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity and alkalinity of the soils. If the plant cover is disturbed, gullying, streambank cutting, and sheet erosion may occur when the soils are flooded. Grazing should be delayed until the soils have drained sufficiently and are firm enough to withstand trampling by livestock.

If this unit is used for irrigated hay and pasture, the main limitations are the salinity, alkalinity, and wetness. To maximize production species of plants that tolerate saline and alkaline soils with a high water table should be planted. Grazing when the soil surface is wet results in compaction of the surface layer and reduces the water infiltration rate.

This map unit is in capability subclass VIs, nonirrigated and irrigated.

The Aquic Ustifluvents are in the Saline Subirrigated, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Arvada soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Draknab soils are in the Sands, 10 to 14 inch ppt., High Plains Southeast range site.

111—Aquic Ustifluvents, saline-Orpha complex, undulating

This map unit is on flood plains and in basins that have interspersed dunes. The slope is 0 to 9 percent. The native vegetation is mainly grasses. Elevation is 5,400 to 5,600 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 48 degrees F, and the frost-free period is 120 to 130 days.

This unit is 50 percent Aquic Ustifluvents and 35 percent Orpha sand. The Aquic Ustifluvents are on flood plains with 0 to 6 percent slopes and the Orpha soils are on stable dunes with 3 to 9 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Vonalee loamy sand on foot slopes of dunes and 5 percent water in blowouts and stream channels.

The Aquic Ustifluvents are very deep and somewhat poorly drained. They formed in alluvium derived from various sources. These soils are highly stratified to a depth of 60 inches or more. Texture throughout the profile ranges from clay to loamy sand. They commonly are strongly saline and strongly alkaline or very strongly alkaline. The physical and chemical properties of these soils vary greatly within short distances. Onsite evaluations are necessary to determine the limitations of these soils for specific uses. Most uses are limited by the wetness, flooding, salinity, and alkalinity of the soils.

Permeability of the Aquic Ustifluvents is slow to rapid. Available water capacity is low. The effective rooting depth is 60 inches or more for plants that can tolerate wet, saline, and alkaline soils, but it is 12 to 24 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. A water table is at a depth of 12 to 24 inches from April through June and is at a depth of 20 to 40 inches the remainder of the year. These soils are subject to a rare hazard of flooding in the spring and early summer.

The Orpha soils are very deep and excessively drained. They formed in eolian deposits derived dominantly from sandstone. The surface layer is typically yellowish brown sand 4 inches thick. The upper 14 inches of the underlying material is light yellowish brown loamy sand, the next 22 inches is very pale brown loamy sand, and the lower part, to a depth of 60 inches or more, is pale brown sand.

Permeability of the Orpha soils is very rapid. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Aquic Ustifluvents is mainly alkali sacaton, inland saltgrass, and Nuttall alkaligrass. As the range condition deteriorates, greasewood and inland saltgrass increase in abundance. As the range condition further deteriorates, annual grasses invade. The potential plant community produces about 3,000 pounds of air-dry vegetation in normal years. Production ranges from 3,500 pounds in favorable years to 2,500 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity and alkalinity of the soils. Grazing should be delayed until the soils have drained sufficiently and are firm enough to withstand trampling by livestock.

The potential plant community on the Orpha soils is mainly prairie sandreed, needleandthread, sand bluestem, and Indian ricegrass. As the range condition deteriorates, unpalatable forbs increase in abundance. As the range condition further deteriorates, annuals and broom snakeweed invade. The potential plant community produces about 1,400 pounds of air-dry vegetation in normal years. Production ranges from 1,700 pounds in favorable years to 900 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the seepage potential.

The Aquic Ustifluvents are in capability subclass VIs, nonirrigated. The Orpha soils are in capability subclass VIe, nonirrigated.

The Aquic Ustifluvents are in the Saline Subirrigated, 10 to 14 inch ppt., Northern Plains range site. The Orpha soils are in the Sands, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Vonalee soils are in the Sandy, 10 to 14 inch ppt., Northern Plains range site.

112—Arvada-Absted-Slickspots complex, 0 to 6 percent slopes

This map unit is on alluvial fans and low terraces. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 6,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 35 percent Arvada clay loam, 30 percent Absted clay loam, and 15 percent Slickspots. The Arvada soils are in areas with 0 to 3 percent slopes, the Absted soils are in areas with 0 to 6 percent slopes, and Slickspots are in microbasins. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are Keyner sandy clay loam on low hummocks and Silhouette clay loam intermixed with the Absted soils. Also included are small areas of Cadoma clay loam and Orella clay loam. Included areas make up 20 percent of the total acreage.

The Arvada soils are very deep and well drained. They formed in alluvium derived dominantly from sodic shale.

The upper 1 inch of the surface layer is typically light brownish gray clay loam. The next 2 inches is light olive brown clay loam. The upper 10 inches of the subsoil is grayish brown, very strongly alkaline clay. The next 12 inches is light brownish gray, very strongly alkaline, moderately saline clay. The lower part of the subsoil, to a depth of 42 inches, is olive gray, moderately alkaline, strongly saline clay containing many threads and seams of gypsum. The substratum, to a depth of 60 inches or more, is olive gray, strongly alkaline, strongly saline clay. In some areas the surface layer is fine sandy loam.

Permeability of the Arvada soils is very slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more for plants that can tolerate saline and alkaline soils, but it is 10 to 15 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

The Absted soils are very deep and well drained. They formed in alluvium derived dominantly from sodic shale. The surface layer is typically light brownish gray clay loam 2 inches thick. The upper 10 inches of the subsoil is light olive brown clay. The next 4 inches is light brownish gray, strongly alkaline, moderately saline clay. The next part, to a depth of 27 inches, is light brownish gray, very strongly alkaline, moderately saline clay loam. The lower part of the subsoil, to a depth of 39 inches, is grayish brown, strongly alkaline, moderately saline clay loam containing common threads of gypsum. The substratum, to a depth of 60 inches or more, is grayish brown, strongly alkaline, moderately saline clay loam. In some areas the surface layer is loam.

Permeability of the Absted soils is slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more for plants that can tolerate saline and alkaline soils, but it is 10 to 20 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

Slickspots are areas of clayey, very strongly alkaline soils that support little or no vegetation. The alkalinity of these areas severely limits most agricultural uses.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Arvada soils is mainly western wheatgrass, bottlebrush squirreltail, Indian ricegrass, birdfoot sagebrush, and gardner saltbush. As the range condition deteriorates, birdfoot sagebrush increases. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 500 pounds of air-dry vegetation in normal years. Production ranges from 700 pounds in favorable years to 350 pounds in unfavorable years. Production of vegetation suitable for livestock grazing is limited by the salinity and alkalinity of the soils. Loss of the surface layer results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for grazing.

The potential plant community on the Absted soils is mainly western wheatgrass, needleandthread, green needlegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. Loss of the surface layer results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for grazing.

The Arvada soils are in capability subclass VIs, nonirrigated; the Absted soils are in capability subclass IVs, nonirrigated; and Slickspots are in capability class VIII, nonirrigated.

The Arvada soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. The Absted soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Cadoma and Orella soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Keyner soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Silhouette soils are in the Clayey, 10 to 14 inch ppt., High Plains Southeast range site.

113—Arvada, runon-Slickspots complex, 0 to 3 percent slopes

This map unit is on hummocky low terraces. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,300 to 6,400 feet. The annual precipitation is 7 to 9 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 60 percent Arvada loam and 25 percent Slickspots. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Absted fine sandy loam; and 10 percent Petrie clay loam, dry with Petrie clay loam.

The Arvada soils are very deep and well drained. They formed in alluvium derived dominantly from sodic shale. The surface layer is typically light brownish gray loam 3 inches thick. The upper 9 inches of the subsoil is light olive brown, very strongly alkaline silty clay. The next 25 inches of the subsoil is brown, very strongly alkaline, moderately saline silty clay. The substratum, to a depth of 60 inches or more, is light olive brown, strongly alkaline, strongly saline silty clay loam. In some areas the surface layer is clay or clay loam.

Permeability of the Arvada soils is very slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more for plants that tolerate alkaline and saline soils, but it is 10 to 20 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

Slickspots are areas of clayey, very strongly alkaline soils that support little or no vegetation. The alkalinity of the soils in these areas severely limits most agricultural uses.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Arvada soils is mainly greasewood, inland saltgrass, alkali sacaton, basin wildrye, bottlebrush squirreltail, and western wheatgrass. As the range condition deteriorates, greasewood and inland saltgrass increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,600 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity and alkalinity of the soils. Loss of the surface layer results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for grazing.

The Arvada soils are in capability subclass VIs, nonirrigated, and Slickspots are in capability class VIII, nonirrigated.

The Arvada soils are in the Saline Lowland, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Absted soils are in the Loamy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Petrie clay loam, dry, soils are in the Saline Upland, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Petrie clay loam soils are in the Impervious Clay, 5 to 9 inch ppt., Wind River Basin range site.

114—Bachus-Nathrop complex, 4 to 20 percent slopes

This map unit is on mountain dip slopes. The native vegetation is mainly grasses and shrubs. Elevation is 7,500 to 9,000 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 33 to 36 degrees F, and the frost-free period is less than 80 days. Frost commonly occurs during summer months.

This unit is 45 percent Bachus loam and 30 percent Nathrop stony loam. The Bachus soils are on lower portions of dip slopes and the Nathrop soils are on upper portions of dip slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Nielsen sandy loam on dip slopes and ridge crests; 5 percent very deep or deep flaggy clay soils on dip slopes and in swales; and 10 percent sandstone Rock outcrop on ridge crests.

The Bachus soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived from quartzitic sandstone. The surface layer is typically very dark grayish brown loam 5 inches thick. The upper 6 inches of the subsoil is dark grayish brown loam. The next 8 inches is dark grayish brown clay loam. The lower 14 inches of the subsoil is brown stony clay loam. Hard fractured quartzitic sandstone is at a depth of 33 inches.

Permeability of the Bachus soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Nathrop soils are moderately deep and well drained. They formed in residuum derived dominantly from quartzitic sandstone. The surface layer is typically dark grayish brown stony loam 6 inches thick. The upper 5 inches of the subsoil is dark grayish brown very stony clay loam. The next 16 inches is dark brown very stony clay loam. The lower part of the subsoil is pale brown very stony clay loam 9 inches thick. Fractured quartzitic sandstone is at a depth of 36 inches.

The Nathrop soils in this map unit do not have a horizon which contains calcium carbonate and thus are outside the characteristics allowed for the Nathrop series. This difference does not significantly affect the use and behavior of the soils.

Permeability of the Nathrop soils is moderate. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for summer livestock grazing and wildlife habitat.

The potential plant community on the Bachus soils is mainly Columbia needlegrass, spike fescue, Idaho fescue, bluebunch wheatgrass, and big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, cheatgrass, gumweed, Canada thistle, and stickseed invade. The potential plant community produces about 1,350 pounds of air-dry vegetation in normal years. Production ranges from 1,600 pounds in favorable years to 1,100 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The potential plant community on the Nathrop soils is mainly Idaho fescue, Columbia needlegrass, spike fescue, prairie junegrass, bluebunch wheatgrass, western wheatgrass, and big sagebrush. As the range condition deteriorates, sagebrush increases. As the range condition further deteriorates, cheatgrass, goldenweed, gumweed, and stickseed invade. The potential plant community produces about 850 pounds of air-dry vegetation in normal years. Production ranges from 1,000 pounds in favorable years to 500 pounds in unfavorable years. The production of vegetation suitable for grazing is limited by the available water capacity and the content of rock fragments in the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

This unit is in capability subclass VIe, nonirrigated.

The Bachus soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site. The Nathrop soils are in the Shallow Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site. Inclusions of Nielsen soils are in the Very Shallow, 15 to 19 inch ppt., Foothills and Mountains East range site. Inclusions of very deep or deep, flaggy clay soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site.

115—Bachus-Clayburn association, undulating

This map unit is on hills in broad mountain valleys. The slope is 2 to 15 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 7,000 to 8,500 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 32 to 37 degrees F, and the frost-free period is less than 80 days. Frost commonly occurs during summer months.

This unit is 60 percent Bachus loam and 25 percent Clayburn loam. The Bachus soils are on convex slopes with 5 to 15 percent slopes, and the Clayburn soils are in concave slopes with 2 to 6 percent slopes.

Included in this unit are 10 percent Moslander loam adjacent to wet drainageways and springs and 5 percent Woosley loam on foot slopes.

The Bachus soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from quartzitic sandstone. The surface layer is typically very dark gray loam 4 inches thick. The subsoil is dark grayish brown clay loam 12 inches thick. The substratum is brown cobbly clay loam 6 inches thick. Hard fractured sandstone is at a depth of 22 inches. In some areas 10 to 20 percent of the surface is covered with cobbles or stones.

Permeability of the Bachus soils are moderate. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Clayburn soils are very deep and well drained. They formed in alluvium derived dominantly from quartzitic sandstone. The surface layer is typically very dark grayish brown loam 5 inches thick. The upper 11 inches of the subsoil is dark gray loam. The lower 21 inches of the subsoil is yellowish brown clay loam. The substratum, to a depth of 60 inches or more, is pale brown sandy clay loam.

Permeability of the Clayburn soils are moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for summer livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly Idaho fescue, Columbia needlegrass, bluebunch wheatgrass, spike fescue, and big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, cheatgrass, gumweed, Canada thistle, and stickseed invade. The potential plant community produces about 1,350 pounds of air-dry vegetation in normal years. Production ranges from 1,600 pounds in favorable years to 1,100 pounds in unfavorable years. The Bachus soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope. The Clayburn soils are moderately suited to livestock watering ponds because of seepage and the slope.

This map unit is in capability subclass VIe, nonirrigated.

The Bachus and Clayburn soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site. Inclusions of Moslander soils are in the Subirrigated, 15 to 19 inch ppt., Foothills and Mountains East range site.

116—Bachus-Pagosa association, 4 to 20 percent slopes

This map unit is on mountain dip slopes. The native vegetation is mainly grasses, shrubs, and coniferous trees. Elevation is 8,000 to 9,000 feet. The annual precipitation is 20 to 25 inches, the annual air temperature is 33 to 35 degrees F, and the frost-free period is less than 80 days. Frost commonly occurs during summer months.

This unit is 45 percent Bachus loam and 35 percent Pagosa loam. The Bachus soils are in open meadow areas and the Pagosa soils are in the woodland areas.

Included in this unit are 5 percent very stony clay soils intermixed with the Pagosa soils, 5 percent very stony loam soils intermixed with the Bachus soils, and 10 percent sandstone Rock outcrop on ridge crests.

The Bachus soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from quartzitic sandstone. Stones and boulders typically cover 2 to 10 percent of the surface. The surface layer is dark brown loam 4 inches thick. The upper 13 inches of the subsoil is dark brown loam. The lower 6 inches of the subsoil is yellowish brown clay loam. Hard fractured quartzitic sandstone is at a depth of 23 inches.

Permeability of the Bachus soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Pagosa soils are deep and well drained. They formed in slopewash alluvium and colluvium derived dominantly from quartzitic sandstone. The surface is typically covered with a 1-inch-thick layer of slightly decomposed pine needles and other forest litter. The surface layer is very dark grayish brown loam 8 inches thick. The subsurface layer is brown loam 7 inches thick. The next layer is brown cobbly clay loam 8 inches thick. The subsoil is brown cobbly clay 20 inches thick. The substratum is light brown cobbly clay loam 8 inches thick. Hard fractured quartzitic sandstone is at a depth of 51 inches.

Permeability of the Pagosa soils is slow. Available water capacity is high. The effective rooting depth is 40 to 60 inches. Runoff is medium and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Bachus soils are used mainly for livestock grazing and wildlife habitat. The Pagosa soils are used mainly for wildlife habitat with a few areas used for livestock grazing or for timber production.

The potential plant community on the Bachus soils is mainly Columbia needlegrass, Idaho fescue, spike fescue, bluebunch wheatgrass, and big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, cheatgrass, gumweed, Canada thistle, and stickseed invade. The potential plant community produces about 1,350 pounds of air-dry vegetation in normal years. Production ranges from 1,600 pounds in favorable years to 1,100 pounds in unfavorable years. The Bachus soils are limited for livestock watering ponds because of the depth to bedrock and the slope.

The potential plant community on the Pagosa soils is mainly lodgepole pine and Douglas-fir with an understory of Idaho fescue and pine grass. Production of vegetation suitable for livestock grazing is limited mainly by the tree canopy cover, which hinders the understory growth.

The Pagosa soils are moderately well suited to the production of lodgepole pine. The site index for lodgepole pine ranges from 60 to 70. The main concern in producing and harvesting timber is slow regrowth. After trees are harvested, reforestation must be carefully managed to reduce competition from undesirable understory plants.

This map unit is in capability subclass VIe, nonirrigated.

The Bachus soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site. The Pagosa soils are in a woodland site. Inclusions of very stony clay soils are in a woodland site. Inclusions of very stony loam soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site.

117—Badland

Badland is an area of moderately steep to very steep barren land with high densities of well integrated drainage networks. This unit consists mainly of exposures of interbedded soft shale, siltstone, and fine grained sandstone.

Included in this unit are small pockets of shallow to deep soils, with varying amounts of vegetation, making up 10 percent of the total acreage.

This unit is used mainly for shelter by livestock, antelope, deer, small mammals, and birds.

These areas yield large amounts of sediment during high intensity rain storms.

This map unit is in capability class VIII.

118—Badwater-Rubble land association, moderately steep

This map unit is on valley sides below quartzitic sandstone escarpments. The slope is 8 to 30 percent. The native vegetation is mainly grasses and shrubs. Elevation is 7,000 to 8,800 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 32 to 35 degrees F, and the frost-free period is less than 80 days. Frost commonly occurs during the summer months.

This unit is 65 percent Badwater bouldery loam and 20 percent Rubble land. The Badwater soils are on colluvial slopes with 8 to 30 percent slopes and Rubble land is at the base of Rock outcrop ledges or near springs and drainageways.

Included in this unit is 10 percent poorly drained bouldery loam soils in drainageways. Also included in the areas of Rubble land is 5 percent very shallow loam soils.

The Badwater soils are very deep and well drained. They formed in colluvium derived dominantly from quartzitic sandstone. The surface layer is typically dark brown bouldery loam 6 inches thick. The upper 18 inches of the subsoil is dark brown very bouldery clay loam. The lower 11 inches of the subsoil is yellowish brown extremely bouldery clay loam. The substratum, to a depth of 60 inches or more, is yellowish brown extremely bouldery loam. In some areas the surface layer is very bouldery loam.

Permeability of the Badwater soils is moderate. Available water capacity is very low. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

Rubble land is an area of loose colluvial boulders and stones. The voids between the stones and boulders are free of soil material. These areas support little or no vegetation.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Badwater soils is mainly Columbia needlegrass, Idaho fescue, bluebunch wheatgrass, western wheatgrass, spike fescue, and prairie junegrass. As the range condition deteriorates, sagebrush increases. As the range condition further deteriorates, cheatgrass, gumweed, Canada thistle, and stickseed invade. The potential plant community produces about 950 pounds of air-dry vegetation in normal years. Production ranges from 1,100 pounds in favorable years to 600 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and the content of rock fragments in the soils. The Badwater soils are poorly suited to livestock watering ponds because of the content of stones and boulders and slope. The use of mechanical equipment to remove brush species is not practical due to the presence of boulders on the surface.

The Badwater soils are in capability subclass VIIs, nonirrigated, and in the Coarse Upland, 15 to 19 inch ppt., Foothills and Mountains East range site. Rubble land is in capability class VIII. Inclusions of very shallow loam soils are in the Very Shallow, 15 to 19 inch ppt., Foothills and Mountains East range site. Inclusions of poorly drained bouldery loam soils are in the Subirrigated, 15 to 19 inch ppt., Foothills and Mountains East range site.

119—Barnum-Redbank fine sandy loams, 0 to 3 percent slopes

This map unit is on flood plains. The native vegetation is mainly grasses and shrubs. Elevation is 5,600 to 6,100 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 120 days.

This unit is 55 percent Barnum fine sandy loam and 30 Redbank fine sandy loam. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Buffcreek gravelly loam, 5 percent Roughlock loam on stream terraces, and 5 percent Typic Fluvaquents adjacent to stream channels.

The Barnum soils are very deep and well drained. They formed in stratified alluvium derived dominantly from sandstone, siltstone, and shale. The surface layer is typically reddish brown fine sandy loam 7 inches thick. The underlying material, to a depth of 60 inches or more, is light reddish brown loam stratified with thin layers of loamy fine sand and silty clay loam.

Permeability of the Barnum soils are moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe. These soils are subject to occasional flooding for brief periods of time from April through July.

The Redbank soils are very deep and somewhat excessively drained. They formed in alluvium derived dominantly from sandstone, siltstone, and shale. The surface layer is typically brown fine sandy loam 6 inches thick. The underlying material, to a depth of 60 inches or more, is light reddish brown sandy loam stratified with thin layers of loamy sand and fine sandy loam.

Permeability of the Redbank soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe. These soils are subject to occasional flooding for brief periods of time from April through July.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, green needlegrass, basin wildrye, and silver sagebrush. As the range condition deteriorates, silver sagebrush, rubber rabbitbrush, and snowberry increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 2,500 pounds of air-dry vegetation in normal years. Production ranges from 3,000 pounds in favorable years to 2,000 pounds in unfavorable years. The Barnum soils are only moderately well suited to livestock watering ponds because of the seepage potential. The Redbank soils are poorly suited to livestock watering ponds because of the seepage potential.

This map unit is in capability subclass IVe, nonirrigated.

The Barnum and Redbank soils are in the Lowland, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Buffcreek soils are in the Shallow Loamy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Roughlock soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Typic Fluvaquents are in the Subirrigated, 10 to 14 inch ppt., Northern Plains range site.

120—Bateson loam, 0 to 6 percent slopes

These very deep, well drained soils are on plateaus. They formed in alluvium or eolian deposits overlying material derived from tuffaceous conglomerate. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,700 to 7,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 37 to 42 degrees F, and the frost-free period is 90 to 110 days.

The surface layer is typically brown loam 3 inches thick. The upper 3 inches of the subsoil is dark yellowish brown loam. The next 6 inches is yellowish brown clay loam. The lower 6 inches of the subsoil is yellowish brown sandy clay loam. The substratum, to a depth of 60 inches or more, is light yellowish brown very gravelly coarse sandy loam. In some areas the surface layer is sandy loam.

Included in this unit are 5 percent Diamondville loam on plateau breaks and 10 percent Whiteriver loam in swales.

Permeability of the Bateson soils is moderately slow in the subsoil and moderately rapid in the substratum. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the seepage potential.

This map unit is in capability subclass IVe, nonirrigated. It is in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

121—Bessemer sandy loam, 1 to 10 percent slopes

These very deep, well drained soils are on pediments. They formed in alluvium derived from various sources. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,500 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

The surface layer is typically brown sandy loam 2 inches thick. The upper part of the subsoil is yellowish brown clay loam 11 inches thick. The lower part of the subsoil, to a depth of 60 inches or more, is pale brown very gravelly sandy clay loam.

Included in this unit are 10 percent Absted fine sandy loam and 5 percent Forkwood loam in swales.

Permeability of the Bessemer soils is slow. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, needleandthread, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. This unit is moderately well suited to livestock watering ponds because of seepage potential.

This map unit is in capability subclass IVe, nonirrigated. It is in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

122—Bessemer gravelly clay loam, 1 to 8 percent slopes

These very deep, well drained soils are on pediments (fig. 3). They formed in alluvium derived from various sources. The native vegetation is mainly grasses and shrubs. Elevation is 5,700 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 120 days.

About 20 percent of the surface is typically covered with gravel and cobbles. The surface layer is dark yellowish brown gravelly clay loam 2 inches thick. The upper 7 inches of the subsoil is yellowish brown gravelly clay. The next 5 inches is yellowish brown gravelly clay loam. The lower part of the subsoil, to a depth of 60 inches or more, is pale brown very cobbly loam.

Included in this unit are 5 percent Copeman loam intermixed with Bessemer soils and 10 percent very cobbly clay loam soils on breaks and knolls.

Permeability of this Bessemer soils is slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat. It is also used for irrigated hay and pasture or for homesite development.

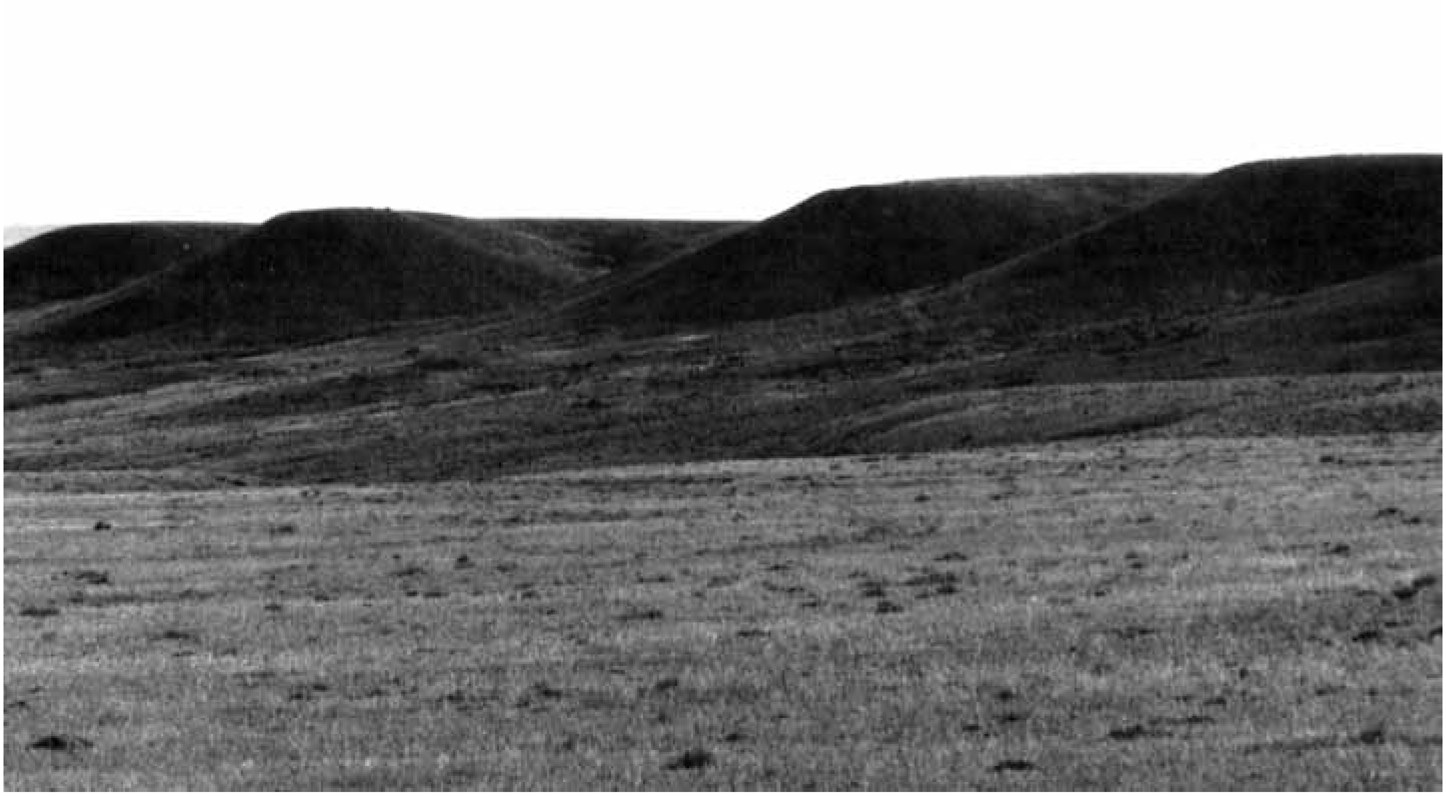

Figure 3.—An area of Bessemer gravelly clay loam, 1 to 8 percent slopes, in the foreground. Samday very cobbly clay, 20 to 60 percent slopes, is on the hills in the background; the Savageton-Samday complex, 3 to 15 percent slopes, is below the hills.

The potential plant community on this unit is mainly green needlegrass, thickspike wheatgrass, bottlebrush squirreltail, and birdfoot sagebrush. As the range condition deteriorates, forbs and big sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,000 pounds of air-dry vegetation in normal years. Production ranges from 1,300 pounds in favorable years to 500 pounds in unfavorable years. These soils are only moderately well suited to livestock watering ponds because of the seepage potential.

If this unit is used for irrigated hay and pasture, the main limitations are the content of rock fragments in the surface layer and the moderate available water capacity. Applications of irrigation water should be adjusted to the available water capacity and water intake rate of the soils and the crop needs. These soils will require more frequent irrigations due to its available water capacity.

If this unit is used for homesite and urban development, the main limitations are the permeability and the shrink-swell potential of the soils. If a septic tank absorption field is to be installed in these soils, increasing the size of the field will help to overcome the restricted permeability. Buildings and roads should be designed to offset the effects of shrinking and swelling. Properly designed building foundations and footings and runoff diverted away from the buildings will help to prevent the structural damage caused by shrinking and swelling. The effects of shrinking and swelling can be minimized by backfilling with material that has a low shrink-swell potential. Removal of gravel and cobbles is needed for best results when landscaping, particularly in areas used for lawns.

This map unit is in capability subclass IVe, nonirrigated, and capability subclass IIIe, irrigated.

The Bessemer soils are in the Clayey, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Copeman soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of very cobbly clay loam soils are in the Shallow Clayey, 10 to 14 inch ppt., High Plains Southeast range site.

123—Bessemer-Urban land complex, 2 to 8 percent slopes

This map unit is on pediments. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 5,400 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 45 percent Bessemer clay loam and 40 percent Urban land. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Samday cobbly loam on moderately steep hillsides, Rock outcrop on steep sides of drainageways, and areas of cut and fill. Included areas make up 15 percent of the total acreage.

The Bessemer soils are very deep and well drained. They formed in alluvium from various sources. The surface layer is typically grayish brown clay loam 3 inches thick. The upper part of the subsoil is light brownish gray clay 8 inches thick. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown very cobbly clay loam. In some areas 20 percent of the surface is covered by cobbles or gravel.

Permeability of the Bessemer soils is slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

Urban land is an area covered by streets, parking lots, buildings, and other structures.

This unit is used mainly for homesite and urban development.

If the Bessemer soils are used for homesite development and urban development, the main limitations are the restricted permeability and the shrink-swell potential. If the soils are used for septic tank absorption fields, the limitation of restricted permeability can be overcome by increasing the size of the absorption field. Buildings and roads should be designed to offset the effects of shrinking and swelling. Properly designed building foundations and footings and runoff diverted away from the buildings will help to prevent the structural damage caused by shrinking and swelling. The effects of shrinking and swelling can be minimized by backfilling with material that has a low shrink-swell potential. Topsoil can be stockpiled and used to reclaim areas disturbed during construction.

The Bessemer soils are in capability subclass IVe, nonirrigated.

124—Blackdraw clay loam, 3 to 10 percent slopes

These very deep, well drained soils are on hillsides. They formed in slopewash alluvium and residuum derived dominantly from sodic shale. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,600 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

The surface layer is typically grayish brown clay loam 2 inches thick. The upper 2 inches of the subsoil is grayish brown clay. The next 3 inches is grayish brown, gypsiferous clay. The lower part of the subsoil, to a depth of 13 inches, is grayish brown, gypsiferous, sodic clay. The substratum, to a depth of 60 inches or more, is dark grayish brown sodic clay.

Included in this unit is 10 percent Lolite clay on hill crests.

Permeability of the Blackdraw soils is slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more for plants that can tolerate alkaline soils, but it is 5 to 15 inches for plants that cannot tolerate them. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, Indian ricegrass, bottlebrush squirreltail, birdfoot sagebrush, and gardner saltbush. As the range condition deteriorates, birdfoot sagebrush and Sandberg bluegrass increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 500 pounds of air-dry vegetation in normal years. Production ranges from 650 pounds in favorable years to 300 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the alkalinity, salinity, and available water capacity of the soils. These soils are only moderately well suited to livestock watering ponds because of the piping potential.

This map unit is in capability subclass VIe, nonirrigated.

The Blackdraw soils are in the Saline Upland, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Lolite soils are in the Shale, 10 to 14 inch ppt., High Plains Southeast range site.

125—Blackdraw-Lolite-Gullied land complex, 3 to 20 percent slopes

This map unit is on hills dissected by numerous gullies. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 5,800 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 48 degrees F, and the frost-free period is 110 to 130 days.

This unit is 45 percent Blackdraw clay loam, 20 percent Lolite clay loam, and 20 percent Gullied land. The Blackdraw soils are on hillsides with 3 to 15 percent slopes, the Lolite soils are on hill crests with 6 to 20 percent slopes, and the Gullied land occurs throughout the unit. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are Amodac loam on hillsides, Razsun clay loam in swales, Samday clay loam on hill crests, and Silhouette soils in drainageways. Included areas make up 15 percent of the total acreage.

The Blackdraw soils are very deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sodic shale. The surface layer is typically dark grayish brown clay loam 1 inch thick. The subsoil is grayish brown, gypsiferous clay 11 inches thick. The substratum to a depth of 60 inches is grayish brown moderately saline clay.

Permeability of the Blackdraw soils is slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more for plants that can tolerate saline and alkaline soils, but it is 10 to 15 inches for plants that cannot tolerate them. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Lolite soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from sodic shale. The surface layer is typically grayish brown gypsiferous clay loam 1 inch thick. The subsoil is grayish brown gypsiferous clay 4 inches thick. The substratum is grayish brown moderately saline, gypsiferous clay 7 inches thick. Soft sodic shale is at a depth of 12 inches.

Permeability of the Lolite soils is slow. Available water capacity is very low. The effective rooting depth is 6 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

Gullied land is areas on the hills where severe erosion has cut a dense network of many small steep-sided gullies. The gullies are 2 to 3 feet deep and 1 to 2 feet wide. Exposures of shale Rock outcrop occur within the gullies.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Blackdraw soils is mainly western wheatgrass, gardner saltbush, Indian ricegrass, bottlebrush squirreltail, and birdfoot sagebrush. As the range condition deteriorates, birdfoot sagebrush and Sandberg bluegrass increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 500 pounds of air-dry vegetation in normal years. Production ranges from 650 pounds in favorable years to 300 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity and available water capacity of the soils. These soils are only moderately well suited to livestock watering ponds because of the piping potential and slope.

The potential plant community on the Lolite soils is mainly birdfoot sagebrush, gardner saltbush, inland saltgrass, Indian ricegrass, bottlebrush squirreltail, and western wheatgrass. As the range condition deteriorates, gardner saltbush and Sandberg bluegrass increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 300 pounds of air-dry vegetation in normal years. Production ranges from 400 pounds in favorable years to 200 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity, available water capacity, and depth of the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope. Loss of the surface layer results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for grazing.

The Blackdraw soils are in capability subclass VIe, nonirrigated; the Lolite soils are in capability subclass VIIs, nonirrigated; and Gullied land is in capability class VIII.

The Blackdraw soils are in the Saline Upland, 10 to 14 inch ppt., High Plains Southeast range site. The Lolite soils are in the Shale, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Amodac soils are in the Saline Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Razsun soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Samday soils are in the Shale, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Silhouette soils are in the Clayey Overflow, 10 to 14 inch ppt., High Plains Southeast range site.

126—Blazon-Worfman loams, 6 to 30 percent slopes

This map unit is on dip slopes. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,200 to 7,400 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 39 to 43 degrees F, and the frost-free period is 90 to 110 days.

This unit is 50 percent Blazon loam and 30 percent Worfman loam. The Blazon soils are on slopes of 15 to 30 percent and the Worfman soils are on slopes of 6 to 20 percent. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Diamondville loam on gently sloping foot slopes, Poposhia loam in drainageways, and Rencot very channery loam and Rock outcrop on ridge crests. Included areas make up 20 percent of the total acreage.

The Blazon soils are shallow and well drained. They formed in residuum and slopewash alluvium derived from sandstone, siltstone, and shale. 20 percent of the surface is typically covered with cobbles and gravel. The surface layer is brown loam 3 inches thick. The underlying material is light brownish gray loam 12 inches thick. Soft sandstone is at a depth of 15 inches.

Permeability of the Blazon soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Worfman soils are shallow and well drained. They formed in slopewash alluvium and residuum derived from sandstone, siltstone, and shale. The surface layer is typically brown loam 2 inches thick. The upper 9 inches of the subsoil is brown clay loam. The lower 6 inches of the subsoil is light brownish gray clay loam. Soft shale is at a depth of 17 inches. In some areas 20 percent of the surface is covered with cobbles and gravel.

Permeability of the Worfman soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly bluebunch wheatgrass, western wheatgrass, mutton bluegrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. This unit is poorly suited to livestock watering ponds because of the depth to bedrock and the slope. Proper management of livestock grazing helps to protect the unit from excessive erosion.

The Blazon soils are in capability subclass VIIe, nonirrigated. The Worfman soils are in capability subclass VIIs, nonirrigated.

The Blazon and Worfman soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Diamondville and Poposhia soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Rencot soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site.

127—Blazon-Cragosen-Worfman association, hilly

This map unit is on hills. The slope is 15 to 60 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,200 to 6,800 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 41 to 43 degrees F, and the frost-free period is 100 to 110 days.

This unit is 30 percent Blazon gravelly loam, 25 percent Cragosen gravelly loam, and 25 percent Worfman loam. The Blazon soils are on south facing hill crests and hillsides with 20 to 60 percent slopes. The Cragosen and Worfman soils are on north facing hill crests and hillsides with 15 to 30 percent slopes.

Included in this unit are small areas of very deep or deep gravelly soils on foot slopes and in drainageways, moderately deep sandy loam soils on the lower parts of hillslopes, and Rock outcrop on hill crests. Included areas make up 20 percent of the total acreage.

The Blazon soils are shallow and well drained. They formed in residuum and slopewash alluvium derived dominantly from shale. The surface layer is typically brown gravelly loam 3 inches thick. The upper 3 inches of the underlying material is light olive brown clay loam. The lower 8 inches is light yellowish brown, strongly alkaline clay loam. Soft sandy shale is at a depth of 14 inches. In some areas the surface layer is loam or gravelly sandy loam.

Permeability of the Blazon soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Cragosen soils are shallow and well drained. They formed in colluvium and residuum derived from sandstone, siltstone, and shale. The surface layer is typically brown gravelly loam 5 inches thick. The upper 4 inches of the subsoil is pale brown very gravelly loam. The lower 9 inches of the subsoil is pale brown extremely gravelly loam. Soft shale is at a depth of 18 inches. In some areas the surface layer is very gravelly loam.

Permeability of the Cragosen soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Worfman soils are shallow and well drained. They formed in residuum derived dominantly from sandstone, siltstone, and shale. The surface layer is typically grayish brown loam 2 inches thick. The upper 4 inches of the subsoil is brown sandy clay loam. The lower part of the subsoil is yellowish brown sandy clay loam 11 inches thick. Soft shale is at a depth of 17 inches.

Permeability of the Worfman soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Blazon and Worfman soils is mainly bluebunch wheatgrass, mutton bluegrass, needleandthread, western wheatgrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas.

The potential plant community on the Cragosen soils is mainly bluebunch wheatgrass, bottlebrush squirreltail, western wheatgrass, needleandthread, antelope bitterbrush, black sagebrush, and junipers. As the range condition deteriorates, black sagebrush and threadleaf sedge increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 450 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 250 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils.

The Blazon and Worfman soils are in capability subclass VIIe, nonirrigated. The Cragosen soils are in capability subclass VIIs, nonirrigated.

The Blazon and Worfman soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Cragosen soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of very deep or deep gravelly soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of moderately deep sandy loam soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

128—Boettcher-Brownsto complex, 10 to 30 percent slopes

This map unit is on hills (fig. 4). The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,600 to 7,800 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 80 to 110 days.

This unit is 60 percent Boettcher cobbly clay loam and 25 percent Brownsto cobbly loam. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Nunnston clay loam on foot slopes; 5 percent shallow, very cobbly loam soils on crests; and 5 percent Rock outcrop on ridges.

The Boettcher soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived from shale and sandstone. 40 percent of the surface is typically covered with cobbles and stones. The surface layer is brown cobbly clay loam 2 inches thick. The upper 7 inches of the subsoil is pale brown cobbly clay loam. The next 7 inches is pale brown clay. The lower 17 inches of the subsoil is pale yellow clay. Soft shale is at a depth of 33 inches.

Permeability of the Boettcher soils is slow. Available water capacity is moderate. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Brownsto soils are very deep and somewhat excessively drained. They formed in alluvium derived from various sources. 40 percent of the surface is typically covered with gravel, cobbles, or stones. The surface layer is grayish brown cobbly loam 3 inches thick. The upper 18 inches of the subsoil is pale brown cobbly loam. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown very cobbly loam.

Permeability of the Brownsto soils is moderate. Available water capacity is low. The effective rooting depth is 60 or more inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly bluebunch wheatgrass, western wheatgrass, mutton bluegrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils. The Boettcher soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope. The Brownsto soils are poorly suited to livestock watering ponds because of the seepage potential and the slope.

This map unit is in capability subclass VIe, nonirrigated.

The Boettcher and Brownsto soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Nunnston soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site. Inclusions of shallow very cobbly soils are in the Shallow

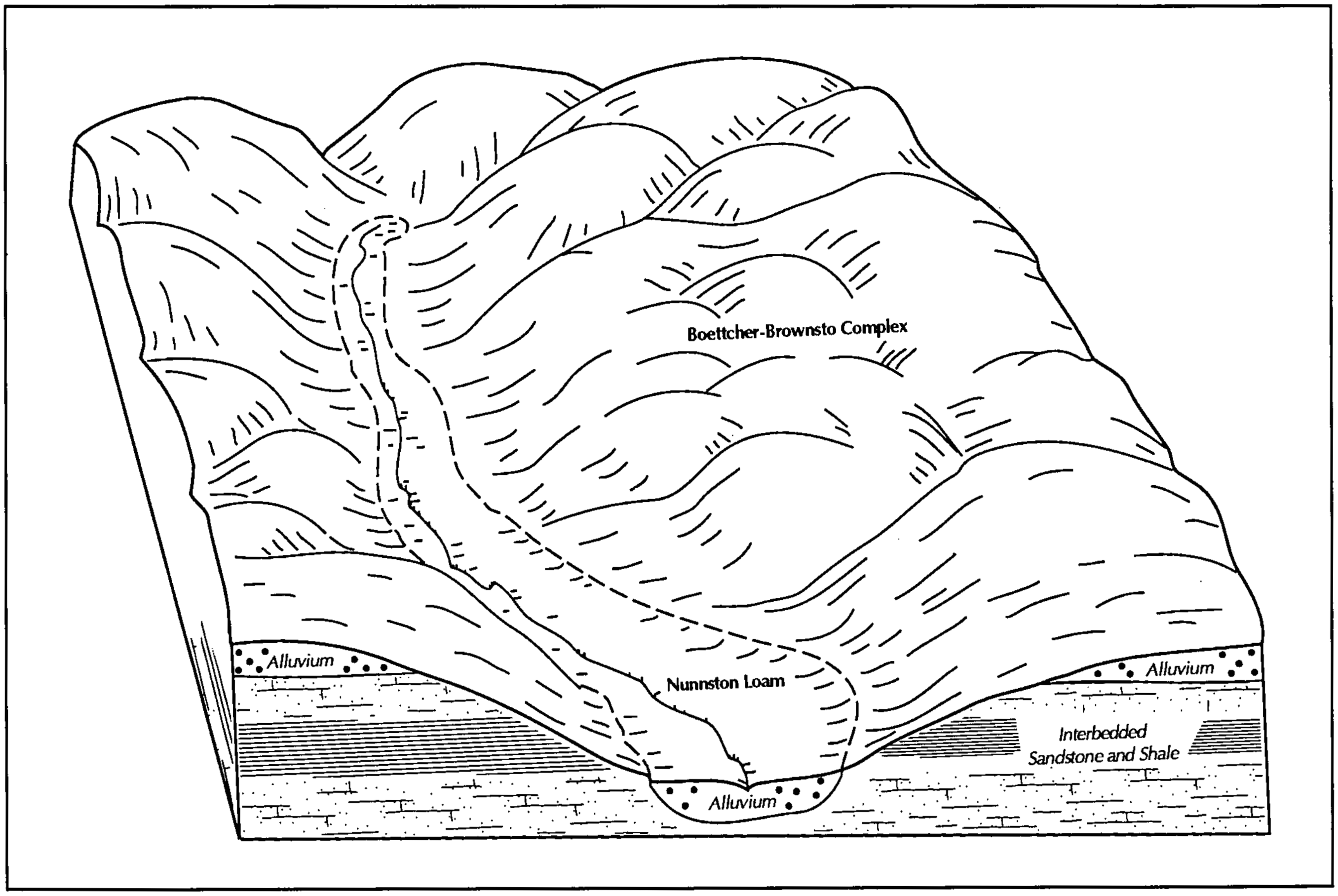

Figure 4.—Diagram of the Boettcher-Brownsto complex, 10 to 30 percent slopes, on hills. Nunnston loam, 2 to 15 percent slopes, is in the draws.

Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

129—Boettcher-Pinelli-Worfman loams, 3 to 15 percent slopes

This map unit is on hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,400 to 6,800 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 100 to 110 days.

This unit is 40 percent Boettcher loam, 20 percent Pinelli loam, and 15 percent Worfman loam. The Boettcher soils are on hillsides with 3 to 8 percent slopes, the Pinelli soils are on foot slopes with 3 to 6 percent slopes, and the Worfman soils are on hill crests with 6 to 15 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Moyerson clay loam, 10 percent Rencot gravelly loam on hill crests, and 5 percent Rock outcrop on hill crests. Also included is 5 percent of a soil similar to the Boettcher soils but which has hard sandstone at a depth of 20 to 40 inches.

The Boettcher soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from shale and sandstone. The surface layer is typically grayish brown loam 2 inches thick. The upper 14 inches of the subsoil is pale brown clay loam. The lower part of the subsoil is pale brown clay loam 19 inches thick. Soft sandstone is at a depth of 35 inches.

Permeability of the Boettcher soils is slow. Available water capacity is moderate. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Pinelli soils are very deep and well drained. They formed in alluvium derived dominantly from shale and sandstone. The surface layer is typically brown loam 4 inches thick. The upper 20 inches of the subsoil is brown clay loam. The next 8 inches is light yellowish brown clay loam. The lower part of the subsoil, to a depth of 60 inches or more, is pale yellow loam. In some areas the surface layer is clay loam.

Permeability of the Pinelli soils is moderately slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

The Worfman soils are shallow and well drained. They formed in residuum derived dominantly from sandstone. The surface layer is typically brown loam 4 inches thick. The upper 10 inches of the subsoil is yellowish brown clay loam. The next 3 inches of the subsoil is light yellowish brown clay loam. Soft sandstone is at a depth of 17 inches.

Permeability of the Worfman soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Boettcher and Pinelli soils is mainly western wheatgrass, bluebunch wheatgrass, needleandthread, mutton bluegrass, green needlegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. The Boettcher soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope. The Pinelli soils are only moderately well suited to livestock watering ponds because of seepage potential and the slope.

The potential plant community on the Worfman soils is mainly bluebunch wheatgrass, western wheatgrass, mutton bluegrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Boettcher and Pinelli soils are in capability subclass IVe, nonirrigated. The Worfman soils are in capability subclass VIIs, nonirrigated.

The Boettcher and Pinelli soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Worfman soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Moyerson soils are in the Shallow Clayey, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Rencot soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

130—Bosler-Alcova complex, 2 to 10 percent slopes

This map unit is on plateaus. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 6,300 feet. The annual precipitation is 12 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 100 to 110 days.

This unit is 55 percent Bosler sandy loam and 30 percent Alcova fine sandy loam. The Bosler soils are on convex slopes of 2 to 10 percent, and the Alcova soils are on concave slopes of 2 to 6 percent. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Ryan Park loamy sand intermixed with the Bosler and Alcova soils and 5 percent Zeomont loamy sand on stable dunes.

The Bosler soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically grayish brown sandy loam 2 inches thick. The upper 12 inches of the subsoil is brown sandy clay loam. The next 10 inches is brown and pinkish gray sandy clay loam. The lower part of the subsoil, to a depth of 60 inches or more, is pinkish gray very gravelly sand. In some areas the surface is loamy sand.

Permeability of the Bosler soils is moderate in the upper part of the subsoil and rapid in the lower part of the subsoil. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Alcova soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically light brownish gray fine sandy loam 5 inches thick. The upper 7 inches of the subsoil is pale brown sandy clay loam. The next 5 inches is very pale brown sandy clay loam. The next part, to a depth of 30 inches, is very pale brown gravelly loam. The lower part of the subsoil, to a depth of 60 inches or more, is white very gravelly sandy loam.

Permeability of the Alcova soils is moderate. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is slight.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. This unit is poorly suited to livestock watering ponds because of the seepage potential.

This map unit is in capability subclass IVe, nonirrigated.

The Bosler and Alcova soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Ryan Park soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Zeomont soils are in the Sands, 10 to 14 inch ppt., High Plains Southeast range site.

131—Bosler-Hiland association, rolling

This map unit is on foot slopes below plateaus. The slope is 3 to 15 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 6,700 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 42 to 44 degrees F, and the frost-free period is 100 to 120 days.

This unit is 45 percent Bosler sandy loam and 40 percent Hiland sandy loam. The Bosler soils are on the upper portion of foot slopes with 6 to 15 percent slopes, and the Hiland soils are on the lower portion of foot slopes with 3 to 6 percent slopes.

Included in this unit are 10 percent Brownsto gravelly loam on ridge crests and 5 percent Cragosen gravelly loam on the sides of steep draws.

The Bosler soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically brown sandy loam 3 inches thick. The upper part of the subsoil is yellowish brown sandy clay loam 13 inches thick. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown very gravelly coarse sand. In some areas the surface layer is gravelly sandy loam. The depth to the very gravelly coarse sand layer is more shallow than the characteristics allowed for the Bosler series, but this difference does not significantly affect the use or behavior of the soils.

Permeability of the Bosler soils is moderate in the upper part of the subsoil and rapid in the lower part of the subsoil. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Hiland soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically pale brown sandy loam 5 inches thick. The upper 19 inches of the subsoil is yellowish brown sandy clay loam. The lower part of the subsoil, to a depth of 60 inches or more, is pale brown sandy loam.

Permeability of the Hiland soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, mutton bluegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. This unit is poorly suited to livestock watering ponds because of the seepage potential.

This map unit is in capability subclass IVe, nonirrigated.

The Bosler and Hiland soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Brownsto and Cragosen soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

132—Bowbac-Hiland fine sandy loams, 3 to 10 percent slopes

This map unit is on hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 6,300 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 40 percent Bowbac fine sandy loam and 40 percent Hiland fine sandy loam. The Bowbac soils are on hill crests and hillsides with 3 to 10 percent slopes, and the Hiland soils are on alluvial fans and foot slopes with 3 to 6 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are Forkwood loam on nearly level alluvial fans and in swales. Also included are Terro sandy loam on hillsides and small areas of Rock outcrop. Included areas make up 20 percent of the total acreage.

The Bowbac soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone. The surface layer is typically light brownish gray fine sandy loam 3 inches thick. The upper 17 inches of the subsoil is yellowish brown sandy clay loam. The next 6 inches is light olive brown sandy clay loam. The lower part of the subsoil is light yellowish brown fine sandy loam 11 inches thick. Soft sandstone is at a depth of 37 inches. In some areas the surface layer is loam.

Permeability of the Bowbac soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Hiland soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from sandstone. The surface layer is typically pale brown fine sandy loam 2 inches thick. The upper 24 inches of the subsoil is yellowish brown sandy clay loam. The lower part of the subsoil, to a depth of 60 inches or more, is pale brown fine sandy loam. In some areas the surface layer is loam.

Permeability of the Hiland soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat. A few areas are used for irrigated hay and pasture.

The potential plant community on this unit is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. The Bowbac soils are poorly suited to livestock watering ponds because of the depth to bedrock and the seepage potential. The Hiland soils are poorly suited to livestock watering ponds because of the seepage potential.

If this unit is used for irrigated hay and pasture, irrigation water should be carefully applied to avoid percolation of irrigation water to the underlying bedrock. Ditch lining or pipelines should be used to convey irrigation water to avoid excessive seepage from ditches. Water from deep percolation dissolves salt in the bedrock, then flows underground down the slope and eventually surfaces and causes saline seeps. Applications of irrigation water should be adjusted to the available water capacity and water intake rate of the soils and the crop needs. The Bowbac soils will require more frequent irrigations due to its available water capacity.

The Bowbac soils are in capability subclass IVe, irrigated and nonirrigated. The Hiland soils are in capability subclass IIIe, irrigated, and IVe, nonirrigated.

The Bowbac and Hiland soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Forkwood soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Terro soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

133—Bowbac-Hiland-Worf complex, 3 to 15 percent slopes

This map unit is on hills. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

This unit is 40 percent Bowbac loamy fine sand, 25 percent Hiland loamy sand, and 20 percent Worf loamy sand. The Bowbac soils are on back slopes and foot slopes with 4 to 15 percent slopes, the Hiland soils are on foot slopes with 4 to 8 percent slopes, and the Worf soils are on back slopes and hill crests with 3 to 10 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit on hill crests are 5 percent Taluce loamy sand, 5 percent shallow gravelly loamy sand soils, and 5 percent Rock outcrop.

The Bowbac soils are moderately deep and well drained. They formed in slopewash alluvium derived dominantly from sandstone. The surface layer is typically brown and yellowish brown loamy fine sand 5 inches thick. The upper 4 inches of the subsoil is yellowish brown sandy loam. The next 4 inches is yellowish brown sandy clay loam. The lower part of the subsoil is brown and light olive brown sandy clay loam 10 inches thick. Soft sandstone interbedded with shale is at a depth of 23 inches.

Permeability of the Bowbac soils is moderate. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Hiland soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from sandstone. The surface layer is typically yellowish brown loamy sand 6 inches thick. The upper 7 inches of the subsoil is yellowish brown sandy loam. The next 15 inches is yellowish brown sandy clay loam. The next part, to a depth of 38 inches, is light yellowish brown sandy clay loam. The lower part of the subsoil, to a depth of 60 inches or more, is light yellowish brown sandy loam.

Permeability of the Hiland soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Worf soils are very shallow or shallow and are well drained. They formed in slopewash alluvium and residuum derived from sandstone. The surface layer is typically brown loamy sand 2 inches thick. The upper 5 inches of the subsoil is yellowish brown sandy loam. The next 8 inches is yellowish brown sandy clay loam. The lower part of the subsoil is yellowish brown fine sandy loam 4 inches thick. Soft sandstone interbedded with shale is at a depth of 19 inches.

Permeability of the Worf soils is moderate. Available water capacity is very low. The effective rooting depth is 8 to 20 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for homesite development.

The potential plant community on the Bowbac and Hiland soils is mainly needleandthread, prairie sandreed, Indian ricegrass, threadleaf sedge, and silver sagebrush. As the range condition deteriorates, fringed sagewort and blue grama increase in abundance. As the range condition further deteriorates, broom snakeweed and cheatgrass invade. The potential plant community produces about 1,300 pounds of air-dry vegetation in normal years. Production ranges from 1,600 pounds in favorable years to 750 pounds in unfavorable years. The Bowbac soils are poorly suited to livestock watering ponds because of the depth to bedrock and the seepage potential. The Hiland soils are poorly suited to livestock watering ponds because of the seepage potential.

The potential plant community on the Worf soils is mainly needleandthread, little bluestem, prairie sandreed, Indian ricegrass, and threadleaf sedge. As the range condition deteriorates, threadleaf sedge and fringed sagewort increase in abundance. As the range condition further deteriorates, broom snakeweed and cheatgrass invade. The potential plant community produces about 1,000 pounds of air-dry vegetation in normal years. Production ranges from 1,300 pounds in favorable years to 600 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. Proper management of livestock grazing helps to protect the soils from excessive erosion. Loss of the surface layer results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for grazing. These soils are poorly suited to livestock watering ponds because of the depth to bedrock.

If this unit is used for homesite development, the main limitation is the depth to bedrock of the Bowbac and Worf soils. The Hiland soils have a moderate limitation of restricted permeability. Septic tank absorption lines placed in the Hiland soils should be below the layer with a restricted permeability. Cuts needed on the Bowbac and Worf soils to provide essentially level building sites can expose bedrock. Installation of septic tank absorption lines in or on the bedrock of the Bowbac and Worf soils is not recommended due to the possibility of inadequate filtration and of contamination of ground water supplies. Effluent can also surface downslope, creating a health hazard. Excavation for houses and access roads can expose material that is highly susceptible to wind erosion. Revegetating disturbed areas around construction sites as soon as possible helps to control wind erosion.

The Bowbac and Hiland soils are in capability subclass IVe, nonirrigated. The Worf soils are in capability subclass VIIs, nonirrigated.

The Bowbac and Hiland soils are in the Sandy, 10 to 14 inch ppt., Northern Plains range site. The Worf soils are in the Shallow Sandy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of the Taluce and shallow gravelly loamy sand soils are in the Shallow Sandy, 10 to 14 inch pt., Northern Plains range site.

134—Bowbac-Taluce-Terro complex, 6 to 20 percent slopes

This map unit is on hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 40 percent Bowbac sandy loam, 25 percent Taluce sandy loam, and 15 percent Terro fine sandy loam. The Bowbac soils are on foot slopes with 6 to 10 percent slopes, the Taluce soils are on hill crests with 6 to 20 percent slopes, and the Terro soils are on back slopes with 6 to 15 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Hiland sandy loam on moderately sloping foot slopes and on alluvial fans, 5 percent shallow sodic soils, 5 percent shallow gravelly soils on hill crests, and 5 percent Rock outcrop on hill crests.

The Bowbac soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone. The surface layer is typically brown sandy loam 4 inches thick. The upper part of the subsoil is yellowish brown sandy clay loam 13 inches thick. The lower part of the subsoil is pale brown sandy loam 5 inches thick. Soft sandstone is at a depth of 22 inches.

Permeability of the Bowbac soils is moderate. Available water capacity is very low. The effective rooting depth is

20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Taluce soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from sandstone. The surface layer is typically yellowish brown sandy loam 4 inches thick. The underlying material is light yellowish brown sandy loam 5 inches thick. Soft platy sandstone is at a depth of 9 inches.

Permeability of the Taluce soils is moderately rapid. Available water capacity is very low. The effective rooting depth is 6 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The Terro soils are moderately deep and well drained. They formed in slopewash alluvium derived dominantly from sandstone. The surface layer is typically brown fine sandy loam 3 inches thick. The upper part of the subsoil is yellowish brown fine sandy loam 14 inches thick. The lower part of the subsoil is very pale brown fine sandy loam 17 inches thick. Soft sandstone is at a depth of 34 inches. In some areas the surface layer is loamy sand or sandy loam.

Permeability of the Terro soils is moderately rapid. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Bowbac soils is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the depth to bedrock, seepage potential, and the slope.

The potential plant community on the Taluce soils is mainly bluebunch wheatgrass, needleandthread, mutton bluegrass, threadleaf sedge, black sagebrush, and Indian ricegrass. As the range condition deteriorates, threadleaf sedge increases. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The potential plant community on the Terro soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, threadleaf sedge, and silver sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the seepage potential, depth to bedrock, and the slope.

The Bowbac and Terro soils are in capability subclass IVe, nonirrigated. The Taluce soils are in capability subclass VIIe, nonirrigated.

The Bowbac soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Taluce soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. The Terro soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Hiland soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of shallow sodic soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of shallow gravelly soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. A few delineations of this map unit in the east-central part of the survey area are in the 10 to 14 inch ppt., Northern Plains range site zone.

135—Bridger loam, 2 to 15 percent slopes

These very deep, well drained soils are on hills within broad mountain valleys. They formed in slopewash alluvium derived from various sources. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 7,000 to 7,800 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 34 to 37 degrees F, and the frost-free period is less than 90 days. Frost commonly occurs during summer months.

The surface layer is typically grayish brown loam 10 inches thick. The upper 5 inches of the subsoil is brown clay loam. The next 11 inches is light yellowish brown clay. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown clay loam. In some areas the surface layer is very fine sandy loam.

Included in this unit are Chittum loam on low hill crests and knolls; Clayburn loam in swales; and Sneffels loam intermixed with the Bridger soils. Included areas make up 15 percent of the total acreage.

Permeability of the Bridger soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly bluebunch wheatgrass, Idaho fescue, prairie junegrass, Griffith wheatgrass, and big sagebrush. As the range condition deteriorates, blue grama, threadleaf sedge, big sagebrush, and rabbitbrush increase in abundance. As the range condition further deteriorates, broom snakeweed, pricklypear, annual grasses, and annual forbs invade. The potential plant community produces about 1,500 pounds of air-dry vegetation in normal years. Production ranges from 2,000 pounds in favorable years to 800 pounds in unfavorable years. These soils are only moderately well suited to livestock watering ponds because of the slope.

This map unit is in capability subclass VIe, nonirrigated.

The Bridger soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Clayburn and Sneffels soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Chittum soils are in the Shallow Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site.

136—Brokenhorn-Hyshot clay loams, 3 to 15 percent slopes

This map unit is on hills and adjacent alluvial fans. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

This unit is 50 percent Brokenhorn clay loam and 30 percent Hyshot clay loam. The Brokenhorn soils are on foot slopes and alluvial fans with 3 to 10 percent slopes and the Hyshot soils are on hillsides with 6 to 15 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Chipenhill clay loam on steep hillsides along drainageways, 10 percent Lonebear clay loam intermixed with the Brokenhorn soils, and 5 percent Gullied land.

The Brokenhorn soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from gypsiferous shale. The surface layer is typically light brownish gray clay loam 1 inch thick. The upper 3 inches of the subsoil is light brownish gray clay loam. The next 22 inches is light brownish gray and brown clay loam. The next 6 inches is grayish brown clay. The lower part of the subsoil, to a depth of 60 inches or more, is grayish brown gypsiferous clay.

Permeability of the Brokenhorn soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Hyshot soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from gypsiferous shale. The surface layer is typically light brownish gray clay loam 2 inches thick. The upper 9 inches of the subsoil is light brownish gray clay loam. The lower 12 inches of the subsoil is light brownish gray, gypsiferous clay loam. Soft platy gypsiferous shale is at a depth of 23 inches.

Permeability of the Hyshot soils is slow. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly green needlegrass, western wheatgrass, blue grama, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, pricklypear invades. The potential plant community produces about 1,000 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. The Brokenhorn soils are only moderately well suited to livestock watering ponds because of the piping potential and the slope. The Hyshot soils are poorly suited to livestock watering ponds because of the slope and the depth to bedrock.

This map unit is in capability subclass IVe, nonirrigated.

The Brokenhorn and Hyshot soils are in the Clayey, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Chipenhill soils are in the Saline Upland, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Lonebear soils are in the Clayey, 10 to 14 inch ppt., Northern Plains range site.

137—Brownsto-Lupinto complex, 6 to 40 percent slopes

This map unit is on ridges and hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 100 to 110 days.

This unit is 60 percent Brownsto cobbly loam and 25 percent Lupinto gravelly loam. The Brownsto soils are on slopes of 15 to 40 percent and the Lupinto soils are on slopes of 6 to 20 percent. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included are small areas of Blazon gravelly loam and Cragosen gravelly loam on ridge crests. Also included are areas of Brownsto cobbly loam with slopes of less than 15 percent. A few areas have inclusions of soils, which are in swales and receive additional snow pack, that have thick dark surface layers. Included areas make up 15 percent of the total acreage.

The Brownsto soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically grayish brown cobbly loam 3 inches thick. The upper 13 inches of the subsoil is grayish brown and light grayish brown gravelly loam. The next 14 inches is light brownish gray very gravelly loam. The lower part of the subsoil, to a depth of 60 inches or more, is light olive brown very gravelly loam.

Permeability of the Brownsto soils is moderate. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Lupinto soils are very deep and somewhat excessively drained. They formed in alluvium derived from various sources. The surface layer is typically yellowish brown gravelly loam 3 inches thick. The upper part of the subsoil is yellowish brown gravelly clay loam 5 inches thick. The lower 33 inches is pale yellow very gravelly loam. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown very gravelly sandy loam. In some areas the surface layer is very gravelly loam.

Permeability of the Lupinto soils is moderate. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly bluebunch wheatgrass, western wheatgrass, mutton bluegrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. This unit is poorly suited to livestock watering ponds because of the seepage potential and slope.

The Brownsto soils are in capability subclass VIIe, nonirrigated, and the Lupinto soils are in capability subclass VIe, nonirrigated.

The Brownsto and Lupinto soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Blazon and Cragosen soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of soils with thick dark surfaces are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site.

138—Buffcreek-Redarrow association, 2 to 25 percent slopes

This map unit is on dissected pediments (fig. 5). The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,100 to 6,600 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 46 degrees F, and the frost-free period is 110 to 120 days.

This unit is 65 percent Buffcreek gravelly loam and 20 percent Redarrow loam. The Buffcreek soils are on planar slopes of the pediment with 2 to 12 percent slopes, and the Redarrow soils are on pediment breaks with 10 to 25 percent slopes.

Included in this unit are 5 percent Redsun very channery loam on pediment breaks, 5 percent Roughlock loam in swales, and 5 percent Rock outcrop on pediment breaks and escarpments.

The Buffcreek soils are very deep and well drained. They formed in alluvium derived from various sources. 30 percent of the surface is typically covered with gravel and cobbles. The surface layer is brown gravelly loam 3 inches thick. The upper part of the subsoil is light brown very gravelly loam 7 inches thick. The next 12 inches is light reddish brown very gravelly loam. The lower part of the subsoil, to a depth of 60 inches or more, is yellowish red very cobbly loam.

Permeability of the Buffcreek soils is moderate. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

The Redarrow soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from sandstone and siltstone. The surface layer is typically reddish brown loam 2 inches thick. The underlying material is yellowish red loam 16 inches thick.

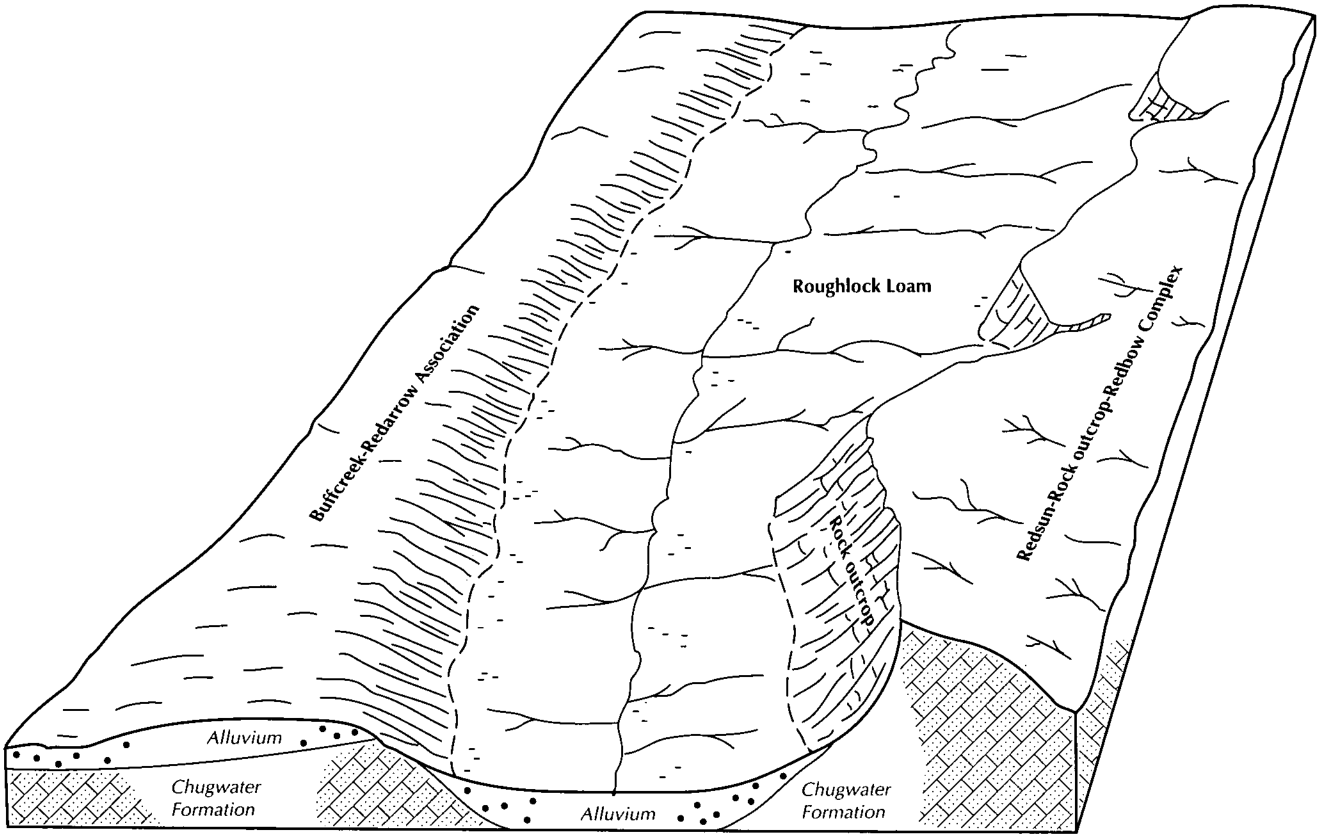

Figure 5.—Diagram of the Buffcreek-Redarrow association, 2 to 25 percent slopes. This association is on pediments dissected by many drainageways. Roughlock loam, 0 to 6 percent slopes, is on toe slopes and alluvial fans below steep breaks, and the Redsun-Rock outcrop-Redbow complex, 3 to 15 percent slopes, is on dip slopes.

Soft, red siltstone is at a depth of 18 inches. In some areas 20 percent of the surface is covered by gravel or cobbles.

Permeability of the Redarrow soils is moderate. Available water capacity is very low. The effective rooting depth is 8 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly bluebunch wheatgrass, western wheatgrass, needleandthread, threadleaf sedge, and black sagebrush. As the range condition deteriorates, blue grama and threadleaf sedge increase in abundance. As the range condition further deteriorates, broom snakeweed and pricklypear invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 450 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of both soils and by the depth of the Redarrow soils. The Buffcreek soils are only moderately well suited to livestock watering ponds because of the seepage potential and the slope. The Redarrow soils are poorly suited to livestock watering ponds because of the seepage potential, slope, and the depth to bedrock.

The Buffcreek soils are in capability subclass VIs, nonirrigated, and the Redarrow soils are in capability subclass VIe, nonirrigated.

The Buffcreek and Redarrow soils are in the Shallow Loamy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Redsun soils are in the Very Shallow, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Roughlock soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site.

139—Cabin-Herbman complex, 6 to 40 percent slopes

This map unit is on mountains. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 7,600 to 9,000 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 35 to 41 degrees F, and the frost-free period is less than 80 days. Frost commonly occurs during summer months.

This unit is 60 percent Cabin loam and 25 percent Herbman very cobbly sandy loam. The Cabin soils are on side slopes with 6 to 30 percent slopes and the Herbman soils are on crests and side slopes with 15 to 40 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Clayburn loam on foot slopes, Irson very gravelly loam on crests, and Rock outcrop. Also included are small areas of Moslander loam in drainageways. Included areas make up 15 percent of the total acreage.

The Cabin soils are very deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from crystalline rock. The surface layer is typically very dark grayish brown loam 6 inches thick. The upper 9 inches of the subsoil is dark brown sandy clay loam. The lower 7 inches of the subsoil is yellowish brown gravelly sandy clay loam. The substratum, to a depth of 60 inches or more, is light olive brown very gravelly loamy sand.

Permeability of the Cabin soils is moderate in the subsoil and rapid in the substratum. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Herbman soils are very shallow or shallow and are well drained. They formed in colluvium and residuum derived dominantly from crystalline rock. 50 percent of the surface is typically covered with gravel and cobbles. The upper part of the surface layer is dark grayish brown very cobbly sandy loam 5 inches thick. The lower part layer is dark brown very gravelly sandy loam 10 inches thick. Soft gneiss is at a depth of 15 inches.

Permeability of the Herbman soils is moderately rapid. Available water capacity is very low. The effective rooting depth is 8 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for summer livestock grazing and wildlife habitat.

The potential plant community on the Cabin soils is mainly Idaho fescue, Columbia needlegrass, bluebunch wheatgrass, and black sagebrush. As the range condition deteriorates, sagebrush increases. As the range condition further deteriorates, Sandberg bluegrass and annual forbs invade. The potential plant community produces about 800 pounds of air-dry vegetation in normal years. Production ranges from 950 pounds in favorable years to 450 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils. The Cabin soils are poorly suited to livestock watering ponds because of the seepage potential and slope.

The potential plant community on the Herbman soils is mainly bluebunch wheatgrass, Idaho fescue, spike fescue, western wheatgrass, and black sagebrush. As the range condition deteriorates, sagebrush increases. As the range condition further deteriorates, Sandberg bluegrass, cheatgrass, and annual forbs invade. The potential plant community produces about 600 pounds of air-dry vegetation in normal years. Production ranges from 800 pounds in favorable years to 400 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and the depth of the soils. The Herbman soils are poorly suited to livestock watering ponds because of the seepage potential, depth to bedrock, and the slope. Access by livestock to the steeper areas is limited and can result in the overgrazing of the less sloping areas.

The Cabin soils are in capability subclass VIe, nonirrigated. The Herbman soils are in capability subclass VIIe, nonirrigated.

The Cabin soils are in the Shallow Igneous, 15 to 19 inch ppt., Foothills and Mountains East range site. The Herbman soils are in the Igneous, 15 to 19 inch ppt., Foothills and Mountains East range site. Inclusions of Clayburn soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site. Inclusions of Irson soils are in the Shallow Igneous, 15 to 19 inch ppt., Foothills and Mountains East range site. Inclusions of Moslander soils are in the Subirrigated, 15 to 19 inch ppt., Foothills and Mountains East range site.

140—Cadoma-Renohill-Samday clay loams, 3 to 12 percent slopes

This map unit is on uplands. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 6,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 40 percent Cadoma clay loam, 25 percent Renohill clay loam, and 25 percent Samday clay loam. The Cadoma soils are on hillsides with 3 to 12 percent slopes, the Renohill soils are in swales with 3 to 6 percent slopes, and the Samday soils are on hill crests with 3 to 12 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Silhouette clay loam in drainageways that receive frequent overflow and 5 percent Gullied land.

The Cadoma soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sodic shale. The surface layer is typically light brownish gray clay loam 5 inches thick. The upper 17 inches of the subsoil is grayish brown and light olive gray, very strongly alkaline, slightly saline clay. The lower 14 inches of the subsoil is light olive gray moderately alkaline, moderately saline clay containing few to common masses of gypsum. Soft sodic shale is at a depth of 36 inches.

Permeability of the Cadoma soils is slow. Available water capacity is moderate. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Renohill soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from shale. The surface layer is typically pale brown clay loam 3 inches thick. The upper 7 inches of the subsoil is grayish brown clay. The lower part of the subsoil is light brownish gray clay loam 19 inches thick. Soft platy shale is at a depth of 19 inches. In some areas the surface is loam.

Permeability of the Renohill soils is slow. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

The Samday soils are very shallow or shallow and are well drained. They formed in residuum derived from shale. The surface layer is typically light brownish gray clay loam 4 inches thick. The underlying material is light brownish gray clay 9 inches thick. Soft, platy shale is at a depth of 13 inches.

Permeability of the Samday soils is slow. Available water capacity is very low. The effective rooting depth is 6 to 20 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Cadoma soils is mainly western wheatgrass, Indian ricegrass, gardner saltbush, bottlebrush squirreltail, and birdfoot sagebrush. As the range condition deteriorates, birdfoot sagebrush increases. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 500 pounds of air-dry vegetation in normal years. Production ranges from 700 pounds in favorable years to 350 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the alkalinity and available water capacity of the soils. Loss of the surface layer results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for grazing. The soils are poorly suited to livestock watering ponds because of the depth to bedrock.

The potential plant community on the Renohill soils is mainly thickspike wheatgrass, green needlegrass, bottlebrush squirreltail, bluebunch wheatgrass, birdfoot sagebrush, and big sagebrush. As the range condition deteriorates, forbs and big sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,000 pounds of air-dry vegetation in normal years. Production ranges from 1,300 pounds in favorable years to 500 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The potential plant community on the Samday soils is mainly western wheatgrass, Indian ricegrass, bottlebrush squirreltail, inland saltgrass, birdfoot sagebrush, and gardner saltbush. As the range condition deteriorates, gardner saltbush and Sandberg bluegrass increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 300 pounds of air-dry vegetation in normal years. Production ranges from 400 pounds in favorable years to 200 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the depth and available water capacity of the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock.

The Cadoma soils are in capability subclass VIe, nonirrigated; the Renohill soils are in capability subclass IVe, nonirrigated; and the Samday soils are in capability subclass VIIs, nonirrigated.

The Cadoma soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. The Renohill soils are in the Clayey, 10 to 14 inch ppt., High Plains Southeast range site. The Samday soils are in the Shale, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Silhouette soils are in the Clayey Overflow, 10 to 14 inch ppt., High Plains Southeast range site.

141—Cambria sandy clay loam, 0 to 6 percent slopes

These very deep, well drained soils are on alluvial fan terraces and plateaus. They formed in alluvium derived dominantly from sandstone and shale. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

The surface layer is typically brown sandy clay loam 4 inches thick. The upper 4 inches of the subsoil is yellowish brown sandy clay loam. The lower part of the subsoil, to a depth of 30 inches, is pale brown clay loam. The substratum, to a depth of 60 inches or more, is very pale brown clay loam. In some areas the lower substratum is loam.

Included in this unit is 10 percent Amodac sandy clay loam.

Permeability of the Cambria soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for irrigated hay and pasture, livestock grazing, and for wildlife habitat. It is also used for homesite development.

The potential plant community on this unit is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. These soils are only moderately well suited to livestock watering ponds because of the seepage potential.

If this unit is used for irrigated hay and pasture, irrigation water should be carefully applied to avoid deep percolation. Water from deep percolation contributes to the formation of saline seeps downslope. Applications of irrigation water should be adjusted to available water capacity, the water intake rate, and the crop needs. Pipelines or ditch lining should be used to avoid seepage from ditches.

If this unit is used for homesite development, the main limitations are the moderate shrink-swell potential and the moderately restricted permeability. If buildings are constructed on these soils, properly designed foundations and footings and runoff diverted away from the buildings will help to prevent the structural damage caused by shrinking and swelling. When installing septic tank absorption fields, increasing the size of the field helps to overcome the restricted permeability.

This map unit is in capability subclass IIIe, irrigated, and IVe, nonirrigated.

The Cambria soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Amodac soils are in the Saline Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

142—Cambria-Zigweid complex, 2 to 15 percent slopes

This map unit is on alluvial fan terraces and plateaus. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 50 percent Cambria very fine sandy loam and 35 percent Zigweid loam. The Cambria soils are on slopes of 2 to 9 percent and the Zigweid soils are on slopes of 6 to 15 percent. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit is Forkwood loam intermixed with the Cambria soils. Also included in a few areas are small areas of Theedle loam on small hills. Included areas make up 15 percent of the total acreage.

The Cambria soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone and shale. The surface layer is typically light brownish gray very fine sandy loam 1 inch thick. The upper part of the subsoil is light olive brown loam 7 inches thick. The lower 21 inches of the subsoil is light gray loam. The substratum, to a depth of 60 inches or more, is light brownish gray loam. In some areas the surface layer is loam or sandy loam.

Permeability of the Cambria soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Zigweid soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone and shale. The surface layer is typically pale brown loam 3 inches thick. The upper 9 inches of the subsoil is brown loam. The lower 23 inches of the subsoil is light brownish gray loam. The substratum, to a depth of 60 inches or more, is light brownish gray loam. In some areas the surface layer is sandy loam.

Permeability of the Zigweid soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. This unit is only moderately well suited to livestock watering ponds because of the seepage potential and slope.

This map unit is in capability subclass IVe, nonirrigated. It is in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

143—Cambria-Zigweid association, dry, sloping

This map unit is on plateaus dissected by numerous drainageways (fig. 6). The slope is 1 to 12 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,400 to 6,200 feet. The annual precipitation is 9 to 10 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 55 percent Cambria sandy clay loam and 35 percent Zigweid clay loam. The Cambria soils are in areas with a slope of 1 to 6 percent and the Zigweid soils are in areas with a slope of 6 to 12 percent.

Included in this unit are 5 percent very gravelly loam soils intermingled with the Cambria soils, and 5 percent moderately deep soils similar to the Cambria soils in areas with a slope of 6 to 12 percent.

The Cambria soils are very deep and well drained. They formed in alluvium derived dominantly from sandy shale. The surface layer is typically pale brown sandy clay loam 2 inches thick. The upper part of subsoil is brown clay loam 5 inches thick. The lower 18 inches of the subsoil is very pale brown clay loam. The substratum, to a depth of 60 inches or more, is pale brown clay loam.

Permeability of the Cambria soils are moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

The Zigweid soils are very deep and well drained. They formed in alluvium derived dominantly from sandy shale. The surface layer is typically pale brown clay loam 4 inches thick. The upper part of the subsoil is pale brown clay loam 6 inches thick. The lower 15 inches of the subsoil is light brownish gray clay loam. The substratum, to a depth of 60 inches or more, is pale brown clay loam.

Permeability of the Zigweid soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Cambria and Zigweid soils is mainly bluebunch wheatgrass, western wheatgrass, needleandthread, Indian ricegrass, and big sagebrush. As the range condition deteriorates, blue grama, Sandberg bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, annuals and pricklypear invade. The potential plant community produces about 400 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited mainly by low annual precipitation. This unit is only moderately well suited to livestock watering ponds because of the seepage potential and the slope.

This map unit is in capability subclass VIe, nonirrigated.

The Cambria and Zigweid soils are in the Loamy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of very gravelly loam soils and moderately deep soils are in the Shallow Loamy, 5 to 9 inch ppt., Wind River Basin range site.

144—Castner-Chincap-Rock outcrop complex, 10 to 40 percent slopes

This map unit is on mountain dip slopes. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,500 to 7,800 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 37 to 42 degrees F, and the frost-free period is 90 to 110 days.

This unit is 45 percent Castner channery loam, 20 percent Chincap fine sandy loam, and 15 percent Rock outcrop. The Castner soils are on planar and convex slopes of 15 to 40 percent, the Chincap soils are on concave slopes of 10 to 20 percent, and Rock outcrop is intermixed with the Castner soils and on escarpments. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Coutis loam in draws and 10 percent soils similar to the Castner soils but with bedrock at a depth of 4 to 8 inches.

The Castner soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from sandstone. The upper part of the surface layer is typically dark brown channery loam 3 inches thick. The lower 4 inches is brown very channery loam. The subsoil is brown very channery loam 4 inches thick. Hard sandstone is at a depth of 11 inches. In some areas the surface layer is channery sandy loam.

Permeability of the Castner soils is moderately rapid. Available water capacity is very low. The effective rooting depth is 8 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

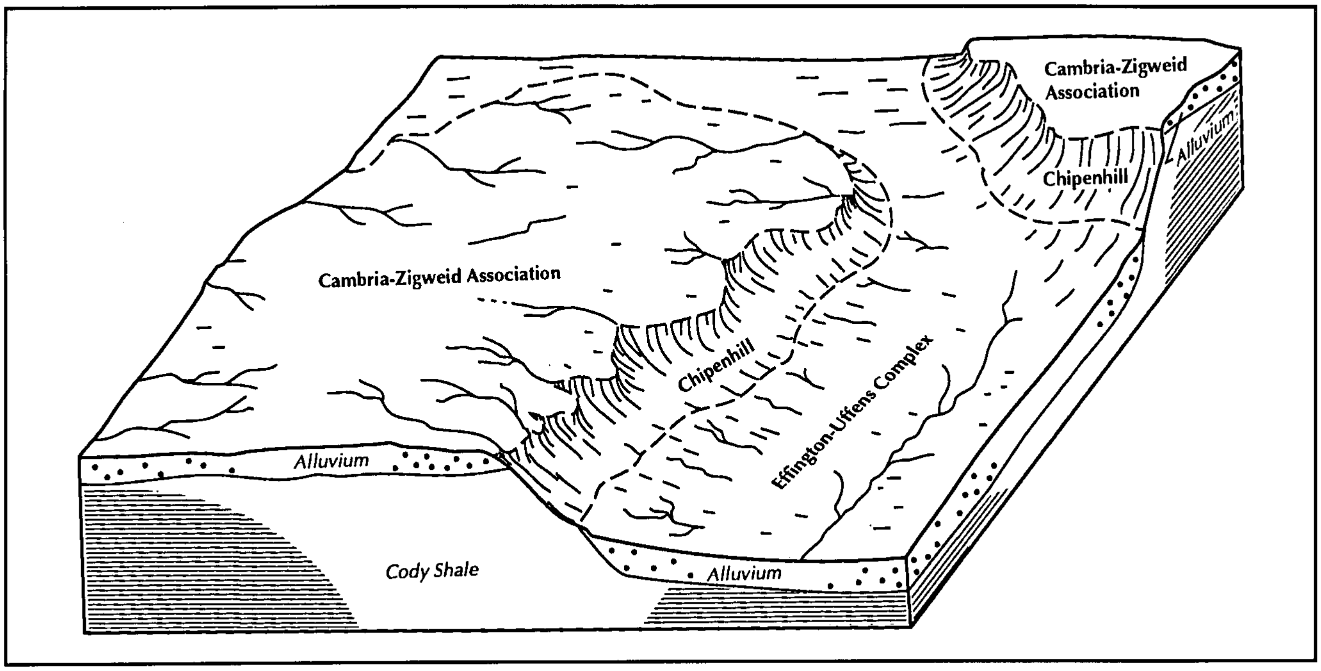

Figure 6.—Diagram of the Cambria-Zigweid association, dry, sloping, on plateaus dissected by many drainageways. Chipenhill gravelly clay loam, 5 to 40 percent slopes, is on plateau breaks, and the Effington-Uffens complex, 0 to 6 percent slopes, is on terraces.

The Chincap soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone. The upper part of the surface layer is typically dark gray fine sandy loam 1 inch thick. The lower 8 inches is dark grayish brown sandy loam. The underlying material is brown sandy loam 14 inches thick. Hard sandstone is at a depth of 23 inches. In some areas the surface layer is sandy loam.

Permeability of the Chincap soils is moderately rapid. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

Rock outcrop consists of exposures of hard, quartzitic sandstone.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Castner soils is mainly bluebunch wheatgrass, Columbia needlegrass, mountain muhly, and Idaho fescue. As the range condition deteriorates, Sandberg bluegrass, prairie junegrass, one-spike oatgrass, and threadleaf sedge increase in abundance. As the range condition further deteriorates, broom snakeweed, curlycup gumweed, and annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 800 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas.

The potential plant community on the Chincap soils is mainly bluebunch wheatgrass, Idaho fescue, prairie junegrass, and big sagebrush. As the range condition deteriorates, blue grama, threadleaf sedge, big sagebrush, and rabbitbrush increase in abundance. As the range condition further deteriorates, broom snakeweed, pricklypear, annual grasses, and annual forbs invade. The potential plant community produces about 1,500 pounds of air-dry vegetation in normal years. Production ranges from 2,000 pounds in favorable years to 800 pounds in unfavorable years. This unit is poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Castner soils are in capability subclass VIIs, nonirrigated; the Chincap soils are in capability subclass VIe, nonirrigated; and the Rock outcrop is in capability class VIII.

The Castner soils are in the Shallow Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. The Chincap soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Coutis soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of soils similar to the Castner soils are in the Very

Shallow, 15 to 19 inch ppt., Foothills and Mountains Southeast range site.

145—Castner-Rock outcrop complex, 5 to 25 percent slopes

This map unit is on mountain dip slopes. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,600 to 7,600 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 35 to 42 degrees F, and the frost-free period is 80 to 110 days.

This unit is 65 percent Castner channery loam and 25 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit is 10 percent Woosley loam in draws and narrow drainageways.

The Castner soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from sandstone. 25 percent of the surface is typically covered with sandstone channers and flagstones. The upper part of the surface layer is dark brown channery loam 2 inches thick. The lower part is dark brown very flaggy loam 6 inches thick. The subsoil is pale brown very flaggy loam 6 inches thick. Hard fractured sandstone is at a depth of 14 inches.

Permeability of the Castner soils is moderately rapid. Available water capacity is very low. The effective rooting depth is 8 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

Rock outcrop consists of exposures of sandstone on ledges along draws and on ridge crests.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Castner soils is mainly true mountainmahogany, antelope bitterbrush, bluebunch wheatgrass, needleandthread, and spike fescue. As the range condition deteriorates, threadleaf sedge and juniper increase in abundance. As the range condition further deteriorates, broom snakeweed, pricklypear, and annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,150 pounds in favorable years to 550 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and the depth of the soils. This unit is poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Castner soils are in capability subclass VIIs, nonirrigated, and Rock outcrop is in capability class VIII.

The Castner soils are in the Rocky Hills, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Woosley soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site.

146—Cavegulch loam, 2 to 8 percent slopes

These very deep, well drained soils are on alluvial fans. They formed in alluvium derived dominantly from gypsiferous shale. The native vegetation is mainly shrubs and grasses. Elevation is 5,000 to 5,800 feet. The annual precipitation is 10 to 12 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

The surface layer is typically light brownish gray loam 1 inch thick. The upper part of the subsoil is light brownish gray clay loam 7 inches thick. The next 11 inches is gray loam containing common masses of gypsum. The lower 17 inches of the subsoil is grayish brown clay loam containing common masses and threads of gypsum. The substratum, to a depth of 60 inches or more, is grayish brown clay loam. In some areas the surface layer is clay loam.

Included in this unit are small areas of Arvada clay loam on the lower part of the alluvial fans, Chipendale clay loam on hillsides, and Silhouette clay loam in drainageways. Included areas make up 20 percent of the total acreage.

Permeability of the Cavegulch soils is moderately slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly gardner saltbush, winterfat, western wheatgrass, birdfoot sagebrush, and Indian ricegrass. As the range condition deteriorates, birdfoot sagebrush and Sandberg bluegrass increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 500 pounds of air-dry vegetation in normal years. Production ranges from 650 pounds in favorable years to 300 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity of the soils. These soils are poorly suited to livestock watering ponds because of the piping potential and the slope.

This map unit is in capability subclass VIs, nonirrigated.

The Cavegulch soils are in the Saline Upland, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Arvada soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Chipendale soils are in the Shallow Clayey, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of

Silhouette soils are in the Clayey Overflow, 10 to 14 inch ppt., High Plains Southeast range site.

147—Cavegulch-Brokenhorn complex, 2 to 10 percent slopes

This map unit is on uplands. The native vegetation is mainly shrubs and grasses. Elevation is 5,000 to 5,800 feet. The annual precipitation is 10 to 12 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 65 percent Cavegulch loam and 25 percent Brokenhorn clay loam. The Cavegulch soils are on convex slopes, and the Brokenhorn soils are on concave slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit is 10 percent Hyshot loam.

The Cavegulch soils are very deep and well drained. They formed in alluvium derived dominantly from gypsiferous shale. The surface layer is typically light brownish gray loam 4 inches thick. The upper part of the subsoil is pale brown clay loam 7 inches thick. The lower 25 inches of the subsoil is gray clay loam containing common masses and seams of gypsum. The substratum, to a depth of 60 inches or more, is gray clay loam. In some areas the surface layer is clay loam.

Permeability of the Cavegulch soils is moderately slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Brokenhorn soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from gypsiferous shale. The surface layer is typically grayish brown clay loam 2 inches thick. The upper 2 inches of the subsoil is brown clay loam. The next 9 inches is pale brown clay loam. The next 24 inches is light grayish brown clay containing a high amount of calcium carbonate. The lower part of the subsoil, to a depth of 60 inches or more, is grayish brown clay containing common seams and filaments of gypsum.

Permeability of the Brokenhorn soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Cavegulch soils is mainly gardner saltbush, winterfat, western wheatgrass, birdfoot sagebrush, and Indian ricegrass. As the range condition deteriorates, birdfoot sagebrush and Sandberg bluegrass increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 500 pounds of air-dry vegetation in normal years. Production ranges from 650 pounds in favorable years to 300 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity of the soils. These soils are poorly suited to livestock watering ponds because of the piping potential and the slope.

The potential plant community on the Brokenhorn soils is mainly birdfoot sagebrush, western wheatgrass, green needlegrass, and winterfat. As the range condition deteriorates, forbs and big sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,000 pounds of air-dry vegetation in normal years. Production ranges from 1,300 pounds in favorable years to 500 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the piping potential and the slope.

The Cavegulch soils are in capability subclass VIs, nonirrigated. The Brokenhorn soils are in capability subclass IVe, nonirrigated.

The Cavegulch soils are in the Saline Upland, 10 to 14 inch ppt., High Plains Southeast range site. The Brokenhorn soils are in the Clayey, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of the Hyshot soils are in the Clayey, 10 to 14 inch ppt., High Plains Southeast range site.

148—Chalkcreek loam, 0 to 8 percent slopes

These very deep, well drained soils are on alluvial fans. They formed in alluvium derived dominantly from tuffaceous siltstone. Elevation is 6,500 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 42 degrees F, and the frost-free period is 90 to 110 days.

The surface layer is typically brown loam 4 inches thick. The subsoil is brown loam 7 inches thick. The substratum, to a depth of 60 inches or more, is pale brown loam.

Included in this unit is Forelle loam in swales. Also included are small areas of Gullied land. Included areas make up 10 percent of the total acreage.

Permeability of the Chalkcreek soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, bluebunch wheatgrass, needleandthread, mutton bluegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. These soils are only moderately well suited to livestock watering ponds because of the seepage potential and piping potential.

This map unit is in capability subclass IVe, nonirrigated. It is in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

149—Chipendale-Chipenhill clay loams, 5 to 15 percent slopes

This map unit is on hills. The native vegetation is mainly shrubs and grasses. Elevation is 5,000 to 5,800 feet. The annual precipitation is 10 to 12 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 55 percent Chipendale clay loam and 30 percent Chipenhill clay loam. The Chipendale soils are on toe slopes and foot slopes with 5 to 10 percent slopes, and the Chipenhill soils are on crests and backslopes with 10 to 15 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Cavegulch soils on the lower part of the hillsides, 5 percent Gullied land, and 5 percent shallow sandy soils on hill crests.

The Chipendale soils are very deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from gypsiferous shale. The surface layer is typically pale brown clay loam 2 inches thick. The upper 2 inches of the subsoil is gray clay loam containing common masses of gypsum. The lower 13 inches of the subsoil is gray and light brownish gray clay loam containing common to many seams and filaments of gypsum. The substratum, to a depth of 60 inches or more, is light brownish gray and yellowish brown clay containing a few thin seams of gypsum. In a few areas the surface layer is loam.

Permeability of the Chipendale soils is slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Chipenhill soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from gypsiferous shale. The surface layer is typically light yellowish brown clay loam 1 inch thick. The next 3 inches is pale brown clay loam. The underlying material is yellowish brown clay 13 inches thick. Soft gypsiferous shale is at a depth of 17 inches. In some areas the surface layer is clay.

Permeability of the Chipenhill soils is slow. Available water capacity is very low. The effective rooting depth is 8 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Chipendale soils is mainly gardner saltbush, western wheatgrass, Indian ricegrass, and bottlebrush squirreltail. As the range condition deteriorates, birdfoot sagebrush and Sandberg bluegrass increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 500 pounds of air-dry vegetation in normal years. Production ranges from 650 pounds in favorable years to 300 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity, alkalinity, and available water capacity of the soils. The Chipendale soils are only moderately well suited to livestock watering ponds because of the piping potential and the slope.

The potential plant community on the Chipenhill soils is mainly western wheatgrass, Indian ricegrass, bottlebrush squirreltail, gardner saltbush, and winterfat. As the range condition deteriorates, gardner saltbush and Sandberg bluegrass increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 300 pounds of air-dry vegetation in normal years. Production ranges from 400 pounds in favorable years to 200 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity, alkalinity, available water capacity, and the depth of the soils. The Chipenhill soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Chipendale soils are in capability subclass VIs, nonirrigated. The Chipenhill soils are in capability subclass VIIe, nonirrigated.

The Chipendale soils are in the Saline Upland, 10 to 14 inch ppt., High Plains Southeast range site. The Chipenhill soils are in the Shale, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Cavegulch soils are in the Saline Upland, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of shallow sandy soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

150—Chipendale-Razsun clay loams, 3 to 15 percent slopes

This map unit is on hills. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

This unit is 55 percent Chipendale clay loam and 30 percent Razsun clay loam. The Chipendale soils are on toe slopes and foot slopes with 3 to 10 percent slopes and the Razsun soils are on back slopes and foot slopes with 5 to 15 percent slopes. The components of this unit are so intricately intermingled that is was not practical to map them separately.

Included in this unit are 5 percent Chipenhill clay loam on hill crests and 10 percent Brokenhorn clay loam on foot slopes.

The Chipendale soils are very deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from gypsiferous shale. The surface layer is typically grayish brown clay loam 1 inch thick. The upper 4 inches of the subsoil is grayish brown clay. The lower 25 inches of the subsoil is light brownish gray clay containing common masses of gypsum. The substratum, to a depth of 60 inches or more, is grayish brown clay containing a few seams of gypsum.

Permeability of the Chipendale soils is slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Razsun soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from gypsiferous shale. The surface layer is typically light brownish gray clay loam 3 inches thick. The upper 8 inches of the subsoil is light brownish gray clay. The lower 10 inches of the subsoil is grayish brown, gypsiferous clay. Soft gypsiferous shale is at a depth of 21 inches.

Permeability of the Razsun soils is slow. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Chipendale soils is mainly inland saltgrass, Sandberg bluegrass, western wheatgrass, and alkali sacaton. As the range condition deteriorates, shadscale increases. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 500 pounds of air-dry vegetation in normal years. Production ranges from 650 pounds in favorable years to 250 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity, alkalinity, and available water capacity of the soils. The Chipendale soils are only moderately well suited to livestock watering ponds because of the piping potential and the slope.

The potential plant community on the Razsun soils is mainly green needlegrass, western wheatgrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, pricklypear invades. The potential plant community produces about 1,300 pounds of air-dry vegetation in normal years. Production ranges from 1,800 pounds in favorable years to 750 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Chipendale soils are in capability subclass VIs, nonirrigated. The Razsun soils are in capability subclass IVe, nonirrigated.

The Chipendale soils are in the Saline Upland, 10 to 14 inch ppt., Northern Plains range site. The Razsun soils are in the Clayey, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Chipenhill soils are in the Shale, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Brokenhorn soils are in the Clayey, 10 to 14 inch ppt., Northern Plains range site.

151—Chipenhill gravelly clay loam, 5 to 40 percent slopes

These very shallow or shallow, well drained soils are on terrace breaks, plateau breaks, and hills. They formed in residuum derived dominantly from gypsiferous shale. The native vegetation is mainly grasses. Elevation is 5,000 to 6,000 feet. The annual precipitation is 8 to 10 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 110 to 130 days.

30 percent of the surface is typically covered with gravel and cobbles. The surface layer is grayish brown gravelly clay loam 3 inches thick. The underlying material is grayish brown clay 8 inches thick. Soft gypsiferous shale is at a depth of 11 inches.

Included in this unit are 10 percent Greybull clay loam in swales and drainageways and 5 percent soils similar to the Chipenhill soils but with bedrock at a depth of 4 to 8 inches on hill crests and shoulders.

Permeability of the Chipenhill soils is slow. Available water capacity is very low. The effective rooting depth is 8 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly bluebunch wheatgrass, western wheatgrass, needleandthread, big sagebrush, and Indian ricegrass. As the range condition deteriorates, blue grama, big sagebrush, and unpalatable forbs increase in abundance. As the range condition further deteriorates, annuals and pricklypear invade. The potential plant community produces about 250 pounds of air-dry vegetation in normal years. Production ranges from 350 pounds in favorable years to 125 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity, alkalinity, available water capacity, and depth of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. Loss of the surface layer results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for grazing. The Chipenhill soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

This map unit is in capability subclass VIIe, nonirrigated.

The Chipenhill soils are in the Shallow Loamy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of soils similar to Chipenhill soils are in the Shale, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Greybull soils are in the Loamy, 5 to 9 inch ppt., Wind River Basin range site.

152—Chipenhill-Rock outcrop complex, 15 to 30 percent slopes

This map unit is on terrace breaks. The native vegetation is mainly shrubs and grasses. Elevation is 5,000 to 5,800 feet. The annual precipitation is 10 to 12 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 55 percent Chipenhill clay loam and 30 percent Rock outcrop. The Chipenhill soils are on shoulders and back slopes with 15 to 30 percent slopes. Rock outcrop occurs throughout the unit. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Chipendale on foot slopes with 10 to 20 percent slopes and 5 percent shallow sandy soils on ridge crests with 15 to 25 percent slopes.

The Chipenhill soils are very shallow or shallow and are well drained. They formed in residuum and slopewash alluvium derived dominantly from soft gypsiferous shale. The surface layer is typically pale brown clay loam 1 inch thick. The underlying material is pale brown and light yellowish brown clay 10 inches thick. Soft platy gypsiferous shale is at a depth of 11 inches. In some areas the surface layer is clay.

Permeability of the Chipenhill soils is slow. Available water capacity is very low. The effective rooting depth is 8 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Rock outcrop consists of exposures of gypsiferous shale.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Chipenhill soils is mainly western wheatgrass, Indian ricegrass, bottlebrush squirreltail, gardner saltbush, and winterfat. As the range condition deteriorates, gardner saltbush and Sandberg bluegrass increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 300 pounds of air-dry vegetation in normal years. Production ranges from 400 pounds in favorable years to 200 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity, alkalinity, depth, and available water capacity of the soils. The Chipenhill soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Chippenhill soils are in capability subclass VIIe, nonirrigated, and Rock outcrop is in capability class VIII.

The Chipenhill soils are in the Shale, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Chipendale soils are in the Shallow Clayey, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of shallow sandy soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

153—Chittum-Nielsen-Rock outcrop complex, 2 to 10 percent slopes

This map unit is on broad mountain ridges and dip slopes. The native vegetation is mainly grasses and shrubs. Elevation is 7,700 to 9,000 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 33 to 36 degrees F, and the frost-free period is less than 80 days. Frost commonly occurs during summer months.

This unit is 40 percent Chittum loam, 30 percent Nielsen very flaggy loam, and 15 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit is 10 percent Bachus loam in swales. Also included is 5 percent of a soil that is similar to the Chittum soils but is shallow to soft sandstone. Where this unit occurs near Fremont County, it has a greater percentage of the Bachus soils.

The Chittum soils are shallow and well drained. They formed in residuum derived dominantly from quartzitic sandstone. The surface layer is typically dark brown loam 2 inches thick. The upper 10 inches of the subsoil is dark brown loam. The lower 6 inches of the subsoil is yellowish brown clay loam. Hard sandstone is at a depth of 18 inches.

Permeability of the Chittum soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Nielsen soils are shallow and well drained. They formed in residuum derived dominantly from quartzitic sandstone. The surface layer is typically dark grayish brown very flaggy loam 2 inches thick. The upper 6 inches of the subsoil is dark grayish brown very flaggy clay loam. The lower 4 inches of the subsoil is yellowish brown very flaggy clay loam. Hard sandstone is at a depth of 12 inches.

Permeability of the Nielsen soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

The Rock outcrop consists of exposures of hard quartzitic sandstone.

This unit is used mainly for summer livestock grazing and wildlife habitat.

The potential plant community on the Chittum soil unit is mainly Idaho fescue, Columbia needlegrass, spike fescue, bluebunch wheatgrass, and big sagebrush. As the range condition deteriorates, sagebrush increases. As the range condition further deteriorates, cheatgrass, goldenweed, gumweed, and stickseed invade. The potential plant community produces about 850 pounds of air-dry vegetation in normal years. Production ranges from 1,000 pounds in favorable years to 500 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock.

The potential plant community on the Nielsen soils is mainly Columbia needlegrass, bluebunch wheatgrass, Idaho fescue, and big sagebrush. As the range condition deteriorates, sagebrush increases. As the range condition further deteriorates, annual forbs, cheatgrass, poverty weed, gum weed, burdock, and stickseed invade. The potential plant community produces about 600 pounds of air-dry vegetation in normal years. Production ranges from 800 pounds in favorable years to 400 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the depth to bedrock.

The Chittum soils are in the capability subclass VIe, nonirrigated; the Nielson soils are in capability subclass VIIs, nonirrigated; and Rock outcrop is in capability class VIII.

The Chittum soils are in the Shallow Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site. The Nielsen soils are in the Very Shallow, 15 to 19 inch ppt., Foothills and Mountains East range site. Inclusions of Bachus soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site.

154—Chittum-Sneffels loams, 5 to 40 percent slopes

This map unit is on mountainsides and dip slopes. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 7,000 to 8,000 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 33 to 36 degrees F, and the frost-free period is less than 90 days. Frost commonly occurs during summer months.

This unit is 50 percent Chittum loam and 30 percent Sneffels loam. The Chittum soils are on slopes of 15 to 40 percent and the Sneffel soils are on slopes of 5 to 15 percent. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Adel loam along drainageways, Foxton fine sandy loam in areas of timber intermixed with the Sneffel soils, Foxton Variant loam in areas of timber on the steep slopes, and Rock outcrop. Also included are small areas of wet soils associated with springs. Included areas make up 20 percent of the total acreage.

The Chittum soils are shallow and well drained. They formed in residuum derived dominantly from sandstone. The surface layer is typically brown loam 3 inches thick. The upper 6 inches of the subsoil is brown gravelly loam. The lower 5 inches of the subsoil is light brown gravelly clay loam. Hard sandstone is at a depth of 14 inches. In some areas the surface layer is covered with 10 to 25 percent flagstones.

Permeability of the Chittum soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Sneffels soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone. The surface layer is typically dark grayish brown and dark brown loam 11 inches thick. The upper 6 inches of the subsoil is brown clay loam. The lower 10 inches of the subsoil is yellowish brown clay. Hard sandstone is at a depth of 27 inches.

Permeability of the Sneffels soils is slow. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for summer livestock grazing and wildlife habitat.

The potential plant community on the Chittum soils is mainly Idaho fescue, bluebunch wheatgrass, Columbia needlegrass, Parry danthonia, and black sagebrush. As the range condition deteriorates, Sandberg bluegrass, prairie junegrass, one-spike oatgrass, and threadleaf sedge increase in abundance. As the range condition further deteriorates, broom snakeweed, curlycup gumweed, and annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 800 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The potential plant community on the Sneffels soils is mainly bluebunch wheatgrass, Idaho fescue, prairie junegrass, Griffith wheatgrass, and sagebrush. As the range condition deteriorates, blue grama, threadleaf sedge, big sagebrush, and rabbitbrush increase in abundance. As the range condition further deteriorates, broom snakeweed, pricklypear, annual grasses, and annual forbs invade. The potential plant community produces about 1,500 pounds of air-dry vegetation in normal years. Production ranges from 2,000 pounds in favorable years to 800 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Chittum soils are in capability subclass VIIe, nonirrigated. The Sneffels soils are in capability subclass VIe, nonirrigated.

The Chittum soils are in the Shallow Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. The Sneffels soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Adel soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Foxton and Foxton Variant soils are in woodland. Inclusions of wet soils are in the Subirrigated, 15 to 19 inch ppt., Foothills and Mountains Southeast range site.

155—Clarkelen sandy loam, gravelly substratum, 0 to 4 percent slopes

These very deep, somewhat excessively drained soils are on flood plains of the North Platte River and its major tributaries. They formed in alluvium derived from various sources. The native vegetation is mainly grasses, shrubs, and forbs. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

The surface layer is typically pale brown sandy loam 6 inches thick. The upper 43 inches of the underlying material is very pale brown sandy loam stratified with thin layers of loamy sand and loam. The lower part, to a depth of 60 inches or more, is light yellowish brown very gravelly sand. In some areas the surface layer is fine sandy loam.

Included in this unit are small areas of Draknab loamy fine sand intermixed with the Clarkelen soils, Haverdad clay loam in slight depressions near terrace breaks, Rivra fine sandy loam in swales, and areas of very gravelly and sandy soils on knobs and terrace breaks. Included areas make up 15 percent of the total acreage.

Permeability of the Clarkelen soils is moderately rapid. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe. This unit is somewhat protected from flooding by major water-control structures, but is subject to a rare hazard of flooding.

This unit is used mainly for livestock grazing and wildlife habitat. It is also used for irrigated hay and pasture, for homesite and urban development, or as a source of sand and gravel.

The potential plant community on the Clarkelen soils is mainly needleandthread, prairie sandreed, Indian ricegrass, and silver sagebrush. As the range condition deteriorates, fringed sagewort and blue grama increase in abundance. As the range condition further deteriorates, broom snakeweed and cheatgrass invade. The potential plant community produces about 1,600 pounds of air-dry vegetation in normal years. Production ranges from 2,100 pounds in favorable years to 1,000 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the seepage potential.

If the Clarkelen soils are used for irrigated hay and pasture, the main limitation is the available water capacity of the soils. These soils will require frequent irrigations due to its available water capacity. Applications of irrigation water should be adjusted to the available water capacity and water intake rate of the soils and to the crop needs. Ditch lining or pipelines should be used to avoid excessive seepage from ditches.

If the Clarkelen soils are used for homesite and urban development, the main limitation is the rare hazard of flooding. Topsoil should be stockpiled and used to reclaim areas disturbed during construction. Excavation for houses and access roads exposes material that is highly susceptible to wind erosion. Revegetating disturbed areas around construction sites as soon as possible helps to control wind erosion. If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies by onsite sewage disposal systems.

This unit is a probable source of sand and gravel. The hazard of wind erosion is a concern that should be addressed. Topsoil can be stockpiled and used to reclaim areas disturbed during excavation.

This map unit is in capability subclasses IIIe, irrigated, and IVe, nonirrigated.

The Clarkelen soils are in the Sandy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Rivra soils are in the Lowland, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Haverdad soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Draknab soils are in the Sands, 10 to 14 inch ppt., Northern Plains range site.

156—Clayburn-Moslander association, gently sloping

This map unit is in mountain valleys. The slope is 0 to 8 percent. The native vegetation is mainly grasses, forbs, sedges, and shrubs. Elevation is 7,000 to 8,500 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 32 to 37 degrees F, and the frost-free period is less than 80 days. Frost commonly occurs during summer months.

This unit is 60 percent Clayburn loam and 25 percent Moslander loam. The Clayburn soils are on alluvial fans with 3 to 8 percent slopes and the Moslander soils are in drainageways with 0 to 3 percent slopes.

Included in this unit are 10 percent Woosley loam on alluvial fans and 5 percent poorly drained stony soils intermixed with the Moslander soils.

The Clayburn soils are very deep and well drained. They formed in alluvium derived dominantly from crystalline rocks. The surface layer is typically dark grayish brown loam 4 inches thick. The upper 7 inches of the subsoil is dark grayish brown loam. The lower 28 inches of the subsoil is brown clay loam. The substratum, to a depth of 60 inches or more, is very pale brown loam. In some areas the surface layer is cobbly loam.

Permeability of the Clayburn soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Moslander soils are very deep and poorly drained. They formed in alluvium derived from various sources. The surface layer is typically dark gray loam 8 inches thick. The subsoil is gray clay loam 18 inches thick. The substratum, to a depth of 60 inches or more, is gray clay loam. In some areas the surface layer is cobbly or stony.

Permeability of the Moslander soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches for plants that can tolerate a water table, but it is 6 to 18 inches for plants that cannot. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate. A seasonal high water table fluctuates between depths of 0 to 1.5 feet from April through July. The water table is above a depth of 30 inches the remainder of the year. These soils are subject to frequent brief periods of flooding from May through July.

This unit is used mainly for summer livestock grazing and wildlife habitat.

The potential plant community on the Clayburn soils is mainly Idaho fescue, Columbia needlegrass, bluebunch wheatgrass, spike fescue, and big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, cheatgrass, gumweed, Canada thistle, and stickseed invade. The potential plant community produces about 1,350 pounds of air-dry vegetation in normal years. Production ranges from 1,600 pounds in favorable years to 1,100 pounds in unfavorable years. The Clayburn soils are only moderately well suited to livestock watering ponds because of the seepage potential and the slope.

The potential plant community on the Moslander soils is mainly Nebraska sedge, tufted hairgrass, northern reedgrass, and alpine timothy. As the range condition deteriorates, willows and unpalatable forbs increase in abundance. As the range condition further deteriorates, Kentucky bluegrass invades. The potential plant community produces about 3,800 pounds of air-dry vegetation in normal years. Production ranges from 4,600 pounds in favorable years to 3,000 pounds in unfavorable years. If the amount of plant cover is reduced, the hazards of gullying, streambank cutting, and sheet erosion when the soils are flooded are increased. Grazing should be delayed until the soils have drained sufficiently and is firm enough to withstand trampling by livestock. The Moslander soils are well suited to livestock watering ponds. Ponds should be constructed during the early fall when the water table is at the deepest depth. Wetness will limit the types of construction equipment that can be used.

The Clayburn soils are in capability subclass VIe, nonirrigated. The Moslander soils are in capability subclass Vw, nonirrigated.

The Clayburn soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site. The Moslander soils are in the Subirrigated, 15 to 19 inch ppt., Foothills and Mountains East range site. Inclusions of Woosley soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site. Inclusions of wet stony soils are in the Subirrigated, 15 to 19 inch ppt., Foothills and Mountains East range site.

157—Coalmont-Milren-Cragosen complex, rolling

This map unit is on terraces and terrace breaks. The slope is 1 to 30 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,800 to 7,400 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 37 to 41 degrees F, and the frost-free period is 90 to 100 days.

This unit is 40 percent Coalmont loam, 25 percent Milren loam, and 15 percent Cragosen gravelly loam. The Coalmont soils are on terrace breaks with 2 to 20 percent slopes, the Milren soils are on terraces with 1 to 8 percent slopes, and the Cragosen soils are on terrace breaks with 5 to 30 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Bosler sandy loam on terraces, Cushool sandy loam on terrace breaks, and Forelle loam on foot slopes of terrace breaks and in swales. Included areas make up 20 percent of the total acreage.

The Coalmont soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from shale and sandstone. The surface layer is typically grayish brown loam 3 inches thick. The upper part of the subsoil is light olive brown clay 14 inches thick. The lower 7 inches of the subsoil is light brownish gray clay loam. The substratum is light brownish gray clay loam 9 inches thick. Soft interbedded shale and sandstone is at a depth of 33 inches. In some areas the surface is very gravelly loam.

Permeability of the Coalmont soils is slow. Available water capacity is moderate. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Milren soils are very deep and well drained. They formed in alluvium derived from various sources. 10 percent of the surface is typically covered with gravel. The surface layer is brown loam 2 inches thick. The upper 17 inches of the subsoil is yellowish brown sandy clay. The next 5 inches is yellowish brown clay loam. The lower 10 inches of the subsoil is very pale brown loam. The substratum, to a depth of 60 inches or more, is very pale brown loam.

Permeability of the Milren soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Cragosen soils are shallow and well drained. They formed in colluvium derived from various sources. 30 percent of the surface is typically covered with gravel and cobbles. The surface layer is brown gravelly loam 2 inches thick. The subsoil is light yellowish brown very gravelly loam 12 inches thick. Soft sandstone at a depth of 14 inches.

Permeability of the Cragosen soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Coalmont and Milren soils is mainly thickspike wheatgrass, green needlegrass, bluebunch wheatgrass, and birdfoot sagebrush. As the range condition deteriorates, forbs and big sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,000 pounds of air-dry vegetation in normal years. Production ranges from 1,300 pounds in favorable years to 500 pounds in unfavorable years. The Milren soils are only moderately well suited to livestock watering ponds because of the seepage potential. The Coalmont soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The potential plant community on the Cragosen soils is mainly bluebunch wheatgrass, western wheatgrass, mutton bluegrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. Loss of the surface layer results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for grazing. The Cragosen soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Coalmont soils are in capability subclass VIe, nonirrigated; the Milren soils are in capability subclass IVe, nonirrigated; and the Cragosen soils are in capability subclass VIIs, nonirrigated.

The Coalmont and Milren soils are in the Clayey, 10 to 14 inch ppt., High Plains Southeast range site. The

Cragosen soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Bosler and Cushool soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Forelle soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

158—Connerton loam, 0 to 3 percent slopes

These very deep, well drained soils are on alluvial fans and low terraces. They formed in alluvium derived dominantly from sandstone and siltstone. The native vegetation is mainly grasses and shrubs. Elevation is 5,700 to 6,100 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 46 degrees F, and the frost-free period is 110 to 120 days.

The surface layer is typically reddish brown loam 7 inches thick. The upper part of the subsoil is reddish brown clay loam 19 inches thick. The next 16 inches is reddish brown clay loam. The lower part of the subsoil, to a depth of 60 inches or more, is yellowish red sandy clay loam. In some areas the surface layer is fine sandy loam.

Included in this unit are 5 percent Roughlock loam, 5 percent saline Aquic Ustifluvents in shallow draws and depressions, and 10 percent very deep loam soils in shallow draws and in swales which flood.

Permeability of the Connerton soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, needleandthread, blue grama, green needlegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, pricklypear, cheatgrass, and broom snakeweed invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. These soils are only moderately well suited to livestock watering ponds because of the seepage potential and the piping potential.

This map unit is in capability subclass IVe, nonirrigated.

The Connerton soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Roughlock soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of saline Aquic Ustifluvents are in the Saline Subirrigated, 10 to 14 inch ppt., Northern Plains range site. Inclusions of very deep loam soils are in the Overflow, 10 to 14 inch ppt., Northern Plains range site.

159—Copeman loam, 0 to 8 percent slopes

These very deep, well drained soils are on pediments. They formed in alluvium derived from various sources. The native vegetation is mainly grasses and shrubs. Elevation is 5,300 to 5,800 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

The surface layer is typically brown loam 3 inches thick. The upper part of the subsoil is pale brown loam 12 inches thick. The next 27 inches is very pale brown gravelly loam. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown very gravelly loam.

Included in this unit are very gravelly loam soils similar to the Copeman soils on pediment breaks and knolls. Also included are areas of Urban land. Included areas make up 10 percent of the total acreage.

Permeability of the Copeman soils is moderate. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay and pasture, or for homesite development.

The potential plant community on this unit is mainly needleandthread, western wheatgrass, bluebunch wheatgrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. This unit is poorly suited to livestock watering ponds because of the seepage potential.

This unit is moderately well suited to irrigated hay and pasture. The main limitation is the available water capacity of the soils. The slope is also a concern in the more sloping areas. These soils will require frequent irrigations due to its available water capacity. Applications of irrigation water should be adjusted to the available water capacity and water intake rate of the soils and the crop needs. Sprinkler irrigation is the most suitable method in the more sloping areas. Although not as effective or efficient, contour ditch irrigation can be used in the more sloping areas if the ditches are designed to adequately apply the water without excessive deep percolation.

If this unit is used for homesite and urban development, the main limitation is the restricted permeability of the soils. When installing septic tank absorption fields, increasing the size of the field helps to overcome the restricted permeability.

This map unit is in capability subclasses IVe, irrigated, and IVe, nonirrigated.

The Copeman soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of very gravelly loam soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

160—Crago gravelly loam, 3 to 15 percent slopes

These very deep, well drained soils are on pediments. They formed in alluvium derived from various sources. The native vegetation is mainly grasses, shrubs, and forbs. Elevation is 5,500 to 6,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

The surface is typically covered with 50 percent rock fragments which are mainly gravel with some cobbles and stones. The upper part of the surface layer is dark brown gravelly loam 2 inches thick. The lower part is yellowish brown very gravelly loam 2 inches thick. The upper part of the subsoil is yellowish brown very gravelly loam 5 inches thick. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown very gravelly loam. In some areas the surface layer is very stony loam.

Included in this unit are 5 percent soils similar to the Crago soils but with shale bedrock at a depth of 20 to 60 inches on pediment breaks and 5 percent soils with thick dark loamy surfaces in swales.

Permeability of the Crago soils is moderate. Available water capacity is very low. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

This unit is used mainly for livestock grazing and wildlife habitat. It is also used for homesite development.

The potential plant community on the Crago soils is mainly bluebunch wheatgrass, western wheatgrass, mutton bluegrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. Production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils. This unit is poorly suited to livestock watering ponds because of the seepage potential and the slope.

If this unit is used for homesite development, the main limitations are the content of rock fragments and the slope. The content of rock fragments makes excavations more difficult. Removal of gravel and cobbles is needed for best results when landscaping, particularly in areas used for lawns.

This map unit is in capability subclass VIIs, nonirrigated.

The Crago soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of soils with thick dark loamy surfaces are in the Loamy Overflow, 10 to 14 inch ppt., High Plains Southeast range site.

161—Crago-Pensore complex, 15 to 40 percent slopes

This map unit is on ridges. The native vegetation is mainly grasses, forbs, shrubs, and occasional junipers. Elevation is 6,600 to 7,800 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 80 to 100 days.

This unit is 55 percent Crago very gravelly loam and 30 percent Pensore very cobbly loam. The Crago soils are on foot slopes with 20 to 40 percent slopes. The Pensore soils are on back slopes and crests with 15 to 30 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Poposhia loam in draw bottoms and 10 percent Rock outcrop on ridge crests.

The Crago soils are very deep and well drained. They formed in colluvium derived dominantly from limestone. 40 percent of the surface is typically covered with rock fragments. The surface layer is brown very gravelly loam 3 inches thick. The upper part of the subsoil is brown very gravelly loam 7 inches thick. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown very cobbly loam.

Permeability of the Crago soils is moderate. Available water capacity is very low. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Pensore soils are shallow and well drained. They formed in residuum derived dominantly from limestone. 50 percent of the surface is typically covered with rock fragments. The surface layer is brown very cobbly loam 2 inches thick. The subsoil is very pale brown very cobbly loam 8 inches thick. Hard fractured limestone is at a depth of 10 inches.

Permeability of the Pensore soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Crago soils is mainly bluebunch wheatgrass, western wheatgrass, needleandthread, mutton bluegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas.

The potential plant community on the Pensore soils is mainly bluebunch wheatgrass, western wheatgrass, and occasional junipers. As the range condition deteriorates, black sagebrush and threadleaf sedge increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 450 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 250 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils.

This map unit is in capability subclass VIIs, nonirrigated.

The Crago soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Pensore soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Poposhia soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

162—Cragosen gravelly loam, 6 to 30 percent slopes

These shallow, well drained soils are on terrace breaks, plateau breaks, and hill crests. They formed in colluvium and residuum derived from various sources. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,100 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 39 to 43 degrees F, and the frost-free period is 100 to 110 days.

The surface layer is typically brown gravelly loam 3 inches thick. The upper 7 inches of the subsoil is pale brown very gravelly loam. The lower 6 inches of the subsoil is light yellowish brown very gravelly loam. Soft siltstone is at a depth of 16 inches. In some areas the surface layer is gravelly sandy loam.

Included in this unit are small areas of Blazon gravelly loam intermixed with the Cragosen soils and Brownsto gravelly loam on gently sloping terraces. Also included are small areas of Poposhia very fine sandy loam and moderately deep sandy loam soils on the upper portion of foot slopes of the breaks. Included areas make up 15 percent of the total acreage.

Permeability of the Cragosen soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly bluebunch wheatgrass, western wheatgrass, Indian ricegrass, needleandthread, mutton bluegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and the depth of the soils. These soils are poorly suited to livestock watering ponds because of the slope and the depth to bedrock.

This map unit is in capability subclass VIIs, nonirrigated.

The Cragosen soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Blazon and Brownsto soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Poposhia soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of the moderately deep sandy loam soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

163—Cragosen-Chalkcreek association, 3 to 45 percent slopes

This map unit is on dissected plateaus and associated breaks. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 7,100 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 39 to 42 degrees F, and the frost-free period is 100 to 110 days.

This unit is 60 percent Cragosen very gravelly sandy loam and 20 percent Chalkcreek loam. The Cragosen soils are on shoulders and back slopes of the breaks with 10 to 45 percent slopes and the Chalkcreek soils are on planar slopes of the plateaus and foot slopes of the breaks with 3 to 12 percent slopes.

Included in this unit are 5 percent Adel loam in swales which receive additional snowpack, 10 percent Delphill loam on the breaks, and 5 percent Rock outcrop on escarpments.

The Cragosen soils are shallow and well drained. They formed in colluvium and residuum derived from various sources. The surface layer is typically pale brown very gravelly sandy loam 4 inches thick. The subsoil is very pale brown very gravelly loam 8 inches thick. Soft tuffaceous siltstone is at a depth of 12 inches.

Permeability of the Cragosen soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Chalkcreek soils are very deep and well drained. They formed in alluvium derived dominantly from tuffaceous siltstone. The surface layer is typically brown loam 4 inches thick. The subsoil is pale brown loam 10 inches thick. The substratum, to a depth of 60 inches or more, is pale brown loam.

Permeability of the Chalkcreek soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Cragosen soils is mainly bluebunch wheatgrass, Indian ricegrass, western wheatgrass, bottlebrush squirreltail, black sagebrush, antelope bitterbrush, and mountainmahogany. As the range condition deteriorates, black sagebrush and threadleaf sedge increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 450 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 250 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. These soils are poorly suited to livestock watering ponds because of the slope and the depth to bedrock.

The potential plant community on the Chalkcreek soils is mainly western wheatgrass, bluebunch wheatgrass, needleandthread, mutton bluegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. The Chalkcreek soils are only only moderately well suited to livestock watering ponds because of the seepage potential and piping potential.

The Cragosen soils are in capability subclass VIIs, nonirrigated. The Chalkcreek soils are in capability subclass IVe, nonirrigated.

The Cragosen soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site. The Chalkcreek soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Adel soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Delphill soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

164—Cragosen Variant-Brownsto Variant association, hilly

This map unit is on hills. The slope is 2 to 30 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,700 to 7,000 feet. The annual precipitation is 10 to 12 inches, the annual air temperature is 39 to 41 degrees F, and the frost-free period is 80 to 100 days.

This unit is 45 percent Cragosen Variant very gravelly sandy loam and 40 percent Brownsto Variant gravelly sandy loam. The Cragosen Variant soils are on crests with 2 to 10 percent slopes and the Brownsto Variant soils are on back slopes and foot slopes with 2 to 30 percent slopes.

Included in this unit are small areas of Edlin sandy loam on gently sloping foot slopes and alluvial fans and small areas of stratified sandy loam soils in drainageways. Included areas make up 15 percent of the total acreage.

The Cragosen Variant soils are very shallow or shallow and are somewhat excessively drained. They formed in residuum derived dominantly from conglomerate. The surface layer is typically pale brown very gravelly sandy loam 2 inches thick. The underlying material is brown very gravelly sandy loam 8 inches thick. Hard conglomerate is at a depth of 10 inches.

Permeability of the Cragosen Variant soils is moderately rapid. Available water capacity is very low. The effective rooting depth is 4 to 20 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

The Brownsto Variant soils are moderately deep and somewhat excessively drained. They formed in slopewash alluvium and residuum derived dominantly from conglomerate. The surface layer is typically pale brown gravelly sandy loam 2 inches thick. The upper part of the subsoil is yellowish brown gravelly sandy loam 7 inches thick. The next 14 inches is light yellowish brown, strongly alkaline very gravelly sandy loam. The lower 7 inches of the subsoil is very pale brown, very strongly alkaline very gravelly sand. Soft conglomerate is at a depth of 30 inches.

Permeability of the Brownsto Variant soils is moderately rapid. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Cragosen Variant soils is mainly bluebunch wheatgrass, western wheatgrass, bottlebrush squirreltail, Indian ricegrass, needleandthread, and black sagebrush. As the range condition deteriorates, black sagebrush and threadleaf sedge increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 450 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 250 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. The Cragosen Variant soils are poorly suited to livestock watering ponds because of the depth to bedrock.

The potential plant community on the Brownsto Variant soils is mainly bluebunch wheatgrass, needleandthread, mutton bluegrass, threadleaf sedge, Indian ricegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils. The Brownsto Variant soils are poorly suited to livestock watering ponds because of the depth to bedrock, seepage, and the slope.

The Cragoson Variant soils are in capability subclass VIIs, nonirrigated. The Brownsto Variant soils are in capability subclass VIs, nonirrigated.

The Cragosen Variant soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site. The Brownsto Variant soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Edlin and stratified sandy loam soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

165—Curecanti very stony loam, 3 to 12 percent slopes

These very deep, well drained soils are on pediments and fan terraces below the north face of Casper Mountain. They formed in alluvium derived from various sources. The native vegetation is mainly grasses, shrubs, and forbs. Elevation is 5,600 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

The surface layer is typically dark brown very stony loam 2 inches thick. The upper 6 inches of the subsoil is dark brown very stony loam. The next 6 inches is brown very stony sandy clay loam. The lower 4 inches of the subsoil is yellowish brown very stony clay loam. The substratum, to a depth of 60 inches or more, is pale brown extremely stony sandy clay loam. The surface layer varies from stony loam to extremely stony loam within short distances.

Included in this unit are 5 percent poorly drained stony soils adjacent to springs and stream channels, 5 percent Rubble land intermixed throughout the unit, and 5 percent soils similar to the Curecanti soils but with a calcareous substratum.

Permeability of the Curecanti soils is moderate. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is slight. The hazard of wind erosion is slight. This unit is subject to a rare hazard of flash flooding during high-intensity storms.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for homesite development.

The potential plant community on the Curecanti soils is mainly bluebunch wheatgrass, little bluestem, mutton bluegrass, western wheatgrass, and black sagebrush. As the range condition deteriorates, western wheatgrass and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,000 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. Production of vegetation suitable for livestock grazing is limited by the available water capacity and the content of rock fragments of the soils. The Curecanti soils are poorly suited to livestock watering ponds because of the content of stones, the slope, and the seepage potential.

If this unit is used for homesite development, the main limitations are the content of stones, flooding, and the restricted permeability. The high content of stones makes excavating and landscape difficult. Removal of gravel, cobbles, and stones is needed for best results when landscaping, particularly in areas used for lawns. When installing septic tank absorption fields, increasing the size of the field helps to overcome the restricted permeability.

This map unit is in capability subclass VIs, nonirrigated.

The Curecanti soils are in the Coarse Upland, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of poorly drained stony soils are in the Subirrigated, 10 to 14 inch ppt., High Plains Southeast range site.

166—Curecanti Variant very cobbly loam, 8 to 35 percent slopes

These moderately deep, well drained soils are on mountain foot slopes. They formed in colluvium and slopewash alluvium derived from various sources. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 6,600 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 90 to 100 days.

35 percent of the surface is typically covered with gravel, cobbles, and stones. The surface layer is dark brown very cobbly loam 8 inches thick. The upper part of the subsoil is yellowish brown very cobbly loam 13 inches thick. The lower part of the subsoil is yellowish brown clay loam 4 inches thick. Soft calcareous shale is at a depth of 25 inches.

Included in this unit are small areas of very deep very cobbly loam soils on foot slopes; and very deep, poorly drained, very stony loam soils adjacent to springs and stream channels. Also included are small areas of Rubble land intermixed throughout the unit. Included areas make up 15 percent of the total acreage.

Permeability of the Curecanti Variant soils is moderate. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for homesite development.

The potential plant community on this unit is mainly bluebunch wheatgrass, Idaho fescue, western wheatgrass, prairie junegrass, Columbia needlegrass, and threetip sagebrush. As the range condition deteriorates, blue grama, threadleaf sedge, and sagebrush increase in abundance. As the range condition further deteriorates, broom snakeweed, curlycup gumweed, and cheatgrass invade. The potential plant community produces about 1,300 pounds of air-dry vegetation in normal years. Production ranges from 1,700 pounds in favorable years to 800 pounds in unfavorable years. The Curecanti Variant soils are poorly suited to livestock watering ponds because of the slope and the depth to bedrock.

If this unit is used for homesite development, the main limitations are the slope, depth to bedrock, and the content of rock fragments. The slope and the depth to bedrock are concerns in the installation of septic tank absorption fields. Absorption lines should be installed on the contour. Installation of septic tank absorption lines in or on the bedrock is not recommended due to the possibility of inadequate filtration and contamination of ground water supplies. The content of rock fragments makes excavating and landscaping difficult.

This map unit is in capability subclass VIe, nonirrigated.

The Curecanti Variant soils are in the Coarse Upland, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of very cobbly loam soils are in the Coarse Upland, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of poorly drained, very stony loam soils are in the Subirrigated, 15 to 19 inch ppt., Foothills and Mountains Southeast range site.

167—Cushman-Forkwood association, rolling

This map unit is on hills and alluvial fans. The slope is 3 to 15 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 6,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 45 percent Cushman very fine sandy loam and 40 percent Forkwood loam. The Cushman soils are on hillsides with 6 to 15 percent slopes and the Forkwood soils are on foot slopes and alluvial fans with 3 to 6 percent slopes.

Included in this unit are small areas of Cambria loam on foot slopes, Keyner loam on alluvial fans, and Shingle loam on hill crests. Also included in the Broad Mesa area are small areas of Ulm loam on nearly level alluvial fans. Included in the Reid Canyon area are small areas of Travson sandy loam and Rock outcrop on hill crests. Included in the northeast corner of the survey area are small areas of soils with thick dark colored surface layers on foot slopes and alluvial fans. Included areas make up 15 percent of the total acreage.

The Cushman soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from siltstone, sandstone, and shale. The surface layer is typically yellowish brown very fine sandy loam 3 inches thick. The upper 10 inches of the subsoil is brown clay loam. The lower 11 inches of the subsoil is light yellowish brown clay loam. Soft siltstone is at a depth of 24 inches. In some areas the surface layer is loam.

Permeability of the Cushman soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Forkwood soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone, siltstone, and shale. The surface layer is typically pale brown loam 3 inches thick. The upper 6 inches of the subsoil is yellowish brown loam. The next 13 inches is yellowish brown clay loam. The next 6 inches is pale brown clay loam. The lower part of the subsoil, to a depth of 41 inches, is pale brown loam. The substratum, to a depth of 60 inches or more, is pale brown loam. In some areas the surface layer is fine sandy loam.

Permeability of the Forkwood soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, bluebunch wheatgrass, needleandthread, mutton bluegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. The Cushman soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope. The Forkwood soils are only moderately well suited to livestock watering ponds because of the seepage potential and the slope.

This unit is in capability subclass IVe, nonirrigated.

The Cushman and Forkwood soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Cambria, Keyner, and Ulm soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Shingle soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Travson soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

168—Cushool-Worfstone sandy loams, 2 to 15 percent slopes

This map unit is on hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,400 to 6,700 feet. The annual precipitation is 10 to 12 inches, the annual air temperature is 40 to 42 degrees F, and the frost-free period is 90 to 100 days.

This unit is 45 percent Cushool sandy loam and 40 percent Worfstone sandy loam. The Cushool soils are on back slopes and foot slopes with 2 to 8 percent slopes and the Worfstone soils are on hill crests with 2 to 15 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Alcova sandy loam and Rock River sandy loam on gently sloping foot slopes. Included areas make up 15 percent of the total acreage.

The Cushool soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone. The surface layer is typically pale brown sandy loam 2 inches thick. The upper part of the subsoil is light yellowish brown sandy clay loam 12 inches thick. The next 11 inches is very pale brown sandy loam. The lower 4 inches of the subsoil is very pale brown sandy loam. Soft sandstone is at a depth of 29 inches.

Permeability of the Cushool soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Worfstone soils are shallow and well drained. They formed in residuum derived dominantly from conglomerate. The surface layer is typically pale brown sandy loam 3 inches thick. The upper 5 inches of the subsoil is yellowish brown sandy clay loam. The next 4 inches is light yellowish brown extremely gravelly sandy clay loam. The lower part of the subsoil is very pale brown extremely gravelly sandy loam 3 inches thick. Hard conglomerate bedrock is at a depth of 15 inches.

Permeability of the Worfstone soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Cushool soils is mainly needleandthread, thickspike wheatgrass, Indian ricegrass, and silver sagebrush. As the range condition deteriorates, silver sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the seepage potential and the depth to bedrock.

The potential plant community on the Worfstone soils is mainly bluebunch wheatgrass, western wheatgrass, Indian ricegrass, bottlebrush squirreltail, needleandthread, and black sagebrush. As the range condition deteriorates, black sagebrush and threadleaf sedge increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 450 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 250 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. These soils are poorly suited to livestock watering ponds because of the seepage potential, depth to bedrock, and the slope.

The Cushool soils are in capability subclass IVe, nonirrigated. The Worfstone soils are in capability subclass VIIs, nonirrigated.

The Cushool soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. The Worfstone soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Alcova soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Rock River soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

169—Decross-Woosley association, sloping

This map unit is in mountain valleys. The slope is 2 to 15 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 7,000 to 8,200 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 35 to 37 degrees F, and the frost-free period is less than 90 days. Frost commonly occurs during summer months.

This unit is 50 percent Decross loam and 40 percent Woosley loam. The Decross soils are on valley floors with 2 to 15 percent slopes and the Woosley soils are on foot slopes of valley sides with 2 to 15 percent slopes.

Included in this unit are small areas of Starley very cobbly loam on ridges and Moslander loam adjacent to drainageways and springs. Included areas make up 10 percent of the total acreage.

The Decross soils are very deep and well drained. They formed in alluvium derived dominantly from limestone or sandstone. The surface layer is typically dark grayish brown loam 8 inches thick. The upper 8 inches of the subsoil is dark grayish brown silty clay loam. The next 8 inches is brown clay loam. The next 8 inches is pale brown clay loam. The lower part of the subsoil, to a depth of 60 inches or more, is light yellowish brown clay loam.

Permeability of the Decross soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Woosley soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from limestone. The surface layer is typically dark brown loam 6 inches thick. The upper 6 inches of the subsoil is dark brown clay loam. The next 5 inches is brown clay loam. The lower partof the subsoil is pale brown gravelly clay loam 6 inches thick. Hard fractured limestone is at a depth of 23 inches.

Permeability of the Woosley soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for summer livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, big sagebrush, bluebunch wheatgrass, spike fescue, Idaho fescue, and Columbia needlegrass. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, cheatgrass, gumweed, Canada thistle, and stickseed invade. The potential plant community produces about 1,350 pounds of air-dry vegetation in normal years. Production ranges from 1,600 pounds in favorable years to 1,100 pounds in unfavorable years. The Decross soils are well suited to livestock watering ponds. The Woosley soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

This unit is in capability subclass VIe, nonirrigated.

The Decross and Woosley soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site. Inclusions of Clayburn soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site. Inclusions of Moslander soils are in the Subirrigated, 15 to 19 inch ppt., Foothills and Mountains range site.

170—Delphill-Blazon loams, 5 to 30 percent slopes

This map unit is on hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 7,400 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 39 to 43 degrees F, and the frost-free period is 90 to 110 days.

This unit is 50 percent Delphill loam and 35 percent Blazon loam. The Delphill soils are on back slopes and foot slopes with 5 to 15 percent slopes and the Blazon soils are on hill crests with 10 to 30 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Diamondville loam on foot slopes and 5 percent Rock outcrop on hill crests.

The Delphill soils are moderately deep and well drained. They formed in residuum and slopewash alluvium derived dominantly from siltstone. The surface layer is typically brown loam 8 inches thick. The upper 20 inches of the underlying material is brown and pale brown loam. The lower 6 inches is light yellowish brown loam. Soft calcareous siltstone is at a depth of 26 inches.

Permeability of the Delphill soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Blazon soils are shallow and well drained. They formed in residuum and slopewash alluvium derived dominantly from siltstone. The surface layer is typically brown loam 2 inches thick. The upper 8 inches of the underlying material is pale brown loam. The lower 7 inches is light olive brown loam. Soft siltstone is at a depth of 17 inches.

Permeability of the Blazon soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Delphill soils is mainly western wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The potential plant community on the Blazon soils is mainly bluebunch wheatgrass, western wheatgrass, mutton bluegrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Delphill soils are in capability subclass IVe, nonirrigated. The Blazon soils are in capability subclass VIIe, nonirrigated.

The Delphill soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Blazon soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Diamondville soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

171—Delplain-Rock outcrop complex, 3 to 30 percent slopes

This map unit is on dip slopes. The native vegetation is mainly grasses and shrubs. Elevation is 6,000 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

This unit is 65 percent Delplain very channery clay and 20 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Neldore clay loam on concave slopes and 5 percent soils similar to the Delplain soils but with bedrock at a depth of 4 to 10 inches.

The Delplain soils are shallow and well drained. They formed in residuum derived dominantly from shale. 50 percent of the surface is typically covered with channers. The surface layer is brown very channery clay 2 inches thick. The subsoil is brown very channery clay 3 inches thick. The substratum is brown extremely channery clay 7 inches thick. Hard fractured platy shale is at a depth of 12 inches.

Permeability of the Delplain soils is moderately slow. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

Rock outcrop consists of exposures of hard platy shale.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Delplain soils is mainly bluebunch wheatgrass, mutton bluegrass, western wheatgrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Delplain soils are in capability subclass VIIs, nonirrigated. The Rock outcrop is in capability class VIII, nonirrigated.

The Delplain soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Neldore soils are in the Shallow Clayey, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of the very shallow soils similar to Delplain are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site.

172—Diamondville-Worfman complex, 3 to 15 percent slopes

This map unit is on hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 6,700 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 41 to 43 degrees F, and the frost-free period is 100 to 110 days.

This unit is 40 percent Diamondville fine sandy loam and 40 percent Worfman loam. The Diamondville soils are on back slopes and foot slopes with 3 to 10 percent slopes; and the Worfman soils are on back slopes and hill crests with 6 to 15 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Forelle loam on gently sloping foot slopes adjacent to drainageways and 10 percent Moyerson clay loam on hill crests.

The Diamondville soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived from sandstone, siltstone, and shale. The surface layer is typically pale brown fine sandy loam 4 inches thick. The upper 6 inches of the subsoil is yellowish brown clay loam. The next 8 inches is light olive brown and light yellowish brown clay loam. The lower part of the subsoil is light brownish gray loam 6 inches thick. Soft shale is at a depth of 24 inches. In some areas the surface layer is loam.

Permeability of the Diamondville soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Worfman soils are shallow and well drained. They formed in residuum derived from sandstone, siltstone, and shale. The surface layer is typically brown loam 2 inches thick. The upper 7 inches of the subsoil is yellowish brown clay loam. The next 3 inches is light yellowish brown clay loam. The lower part of the subsoil is pale brown loam 4 inches thick. Soft silty shale is at a depth of 16 inches.

Permeability of the Worfman soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Diamondville soils is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, mutton bluegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the depth to bedrock.

The potential plant community on the Worfman soils is mainly bluebunch wheatgrass, western wheatgrass, mutton bluegrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Diamondville soils are in capability subclass IVe, nonirrigated. The Worfman soils are in capability subclass VIIs, nonirrigated.

The Diamondville soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Worfman soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Forelle soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Moyerson soils are in the Shallow Clayey, 10 to 14 inch ppt., High Plains Southeast range site.

173—Docpar loam, 0 to 4 percent slopes

These very deep, well drained soils are on terraces along the North Platte River and its major tributaries. They formed in alluvium derived from various sources. The native vegetation is mainly grasses, shrubs, and forbs. Elevation is 5,000 to 5,500 feet. The annual precipitation

is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 110 to 130 days.

The surface layer is typically brown loam 2 inches thick. The upper part of the subsoil is light yellowish brown loam 16 inches thick. The next 12 inches of the subsoil is pale brown loam. The substratum, to a depth of 60 inches or more, is pale brown fine sandy loam stratified with thin layers of loamy sand and loamy fine sand. In some areas the surface layer is clay loam.

Included in this unit is 10 percent Silhouette clay loam in slight depressions and on toe slopes of adjacent upland breaks.

Permeability of the Docpar soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for irrigated hay and pasture, wildlife habitat, or for homesite development. A few areas are native rangeland.

The potential plant community on the Docpar soils is mainly western wheatgrass, needleandthread, blue grama, green needlegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

These soils are well suited to irrigated hay and pasture. Applications of irrigation should be adjusted to the available water capacity and water intake rate of the soils and to the crop needs.

This unit is well suited to homesite and urban development. Septic tank absorption lines should be installed below the layer with a restricted permeability. Topsoil can be stockpiled and used to reclaim areas disturbed during construction. Excavation for houses and access roads exposes material that is highly susceptible to wind erosion. Revegetating disturbed areas around construction sites as soon as possible helps to control wind erosion.

This map unit is in capability subclasses IIIe, irrigated, and IVe, nonirrigated.

The Docpar soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Silhouette soils are in the Clayey, 10 to 14 inch ppt., Northern Plains range site.

174—Draknab loamy fine sand, 0 to 4 percent slopes

These very deep, excessively drained soils are on flood plains of the North Platte River and its major tributaries. They formed in alluvium derived from various sources. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 110 to 130 days.

The surface layer is typically brown loamy fine sand 3 inches thick. The upper 37 inches of the underlying material is yellowish brown loamy sand stratified with thin layers of loamy fine sand and sandy loam. The lower part, to a depth of 60 inches or more, is light yellowish brown sand stratified with thin layers of fine sand. In a few areas these soils are underlain by very gravelly sand at 50 inches or more.

Included in this unit are small areas of Clarkelen, gravelly substratum intermixed with the Draknab soils; and Rivra and Haverdad soils in swales. Also included in a few areas are small areas of soils similar to the Draknab soils which have been deposited by wind and have hummocky relief. Included areas make up 10 percent of the total acreage.

Permeability of the Draknab soils is rapid. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe. This unit is somewhat protected from flooding by major water-control structures but is subject to a rare hazard of flooding.

This unit is used mainly for livestock grazing and wildlife habitat. It is also used for homesite development, for irrigated hay and pasture, or as a source of sand and gravel.

The potential plant community on the Draknab soils is mainly prairie sandreed, needleandthread, sand bluestem, western wheatgrass, and silver sagebrush. As the range condition deteriorates, unpalatable forbs increase in abundance. As the range condition further deteriorates, annuals and broom snakeweed invade. The potential plant community produces about 1,400 pounds of air-dry vegetation in normal years. Production ranges from 1,700 pounds in favorable years to 900 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils. This unit is poorly suited to livestock watering ponds because of the seepage potential.

If this unit is used for irrigated hay and pasture, the main limitation is the available water capacity of the soils and will thus require frequent irrigations. Applications of irrigation water should be adjusted to the available water capacity and water intake rate of the soils and to the crop needs. Ditch lining or pipelines should be used to convey irrigation water in order to avoid excessive seepage from ditches.

If this unit is used for homesite development, the main limitations are the hazards of flooding, wind erosion, and groundwater contamination by septic tank absorption fields. Preserving the existing plant cover during construction helps to control erosion. Excavation for houses and access roads exposes material that is highly susceptible to wind erosion. Revegetating disturbed areas around construction sites as soon as possible helps to control soil blowing. If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies by onsite sewage disposal systems.

This unit is a probable source of sand. The hazard of wind erosion is a concern that should be addressed. The soils in this unit are underlain by gravel in some areas, and only those areas are suitable as a source of gravel. Topsoil can be stockpiled and used to reclaim areas disturbed during excavation.

This map unit is in capability subclasses IVs, irrigated, and IVe, nonirrigated.

The Draknab soils are in the Sands, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Clarkelen soils are in the Sandy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Rivra soils are in the Lowland, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Haverdad soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site.

175—Dune land

Dune land is barren sandy land on ridges and in intervening troughs that shift with the wind. The ridges are typically oriented in a southwest to northeast direction.

These areas are sometimes used as shelter by livestock, antelope, and deer.

Major reclamation practices would be required to stabilize these areas.

This map unit is in capability class VIII.

176—Edlin-Rock River-Bosler complex, 3 to 30 percent slopes

This map unit is on hills separated or dissected by numerous draws. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,500 to 7,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 38 to 43 degrees F, and the frost-free period is 90 to 110 days.

This unit is 50 percent Edlin fine sandy loam, 20 percent Rock River fine sandy loam, and 15 percent Bosler sandy loam. The Edlin soils are on shoulders, back slopes, and foot slopes with 3 to 30 percent slopes; the Rock River soils are on back slopes and foot slopes with 3 to 20 percent slopes; and the Bosler soils are on foot slopes with 3 to 10 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Blackhall sandy loam on hill crests and Rawlins sandy loam intermixed with the Bosler and Rock River soils. Also included on steep hillsides is McFadden fine sandy loam and very gravelly loamy sand soils. Included areas make up 15 percent of the total acreage.

The Edlin soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone. The surface layer is typically brown fine sandy loam 3 inches thick. The upper part of the subsoil is brown fine sandy loam 12 inches thick. The lower part of the subsoil, to a depth of 60 inches or more, is pale brown fine sandy loam. In some areas the surface layer is sandy loam.

Permeability of the Edlin soils is moderately rapid. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The Rock River soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone. The surface layer is typically grayish brown fine sandy loam 4 inches thick. The upper 16 inches of the subsoil is light brown sandy clay loam. The lower 12 inches of the subsoil is light yellowish brown sandy loam. The substratum, to a depth of 60 inches or more, is very pale brown gravelly sandy loam.

Permeability of the Rock River soils is moderate. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The Bosler soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically grayish brown sandy loam 2 inches thick. The upper 8 inches of the subsoil is brown sandy clay loam. The next 10 inches is pale brown sandy clay loam. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown very gravelly loamy sand.

Permeability of the Bosler soils is moderate in the upper part of the subsoil and rapid in the lower part of the subsoil. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly needleandthread, thickspike wheatgrass, Indian ricegrass, threadleaf sedge, and big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the seepage potential and the slope.

The Edlin soils are in capability subclass VIe, nonirrigated, and the Rock River and Bosler soils are in capability subclass IVe, nonirrigated.

The Edlin, Rock River, and Bosler soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Blackhall, McFadden, Rawlins, and very gravelly loamy sand soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

177—Edlin-Ryan Park sandy loams, 2 to 12 percent slopes

This map unit is on alluvial fans and terraces. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,200 to 6,500 feet. The annual precipitation is 10 to 12 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 100 to 110 days.

This unit is 60 percent Edlin sandy loam and 25 percent Ryan Park sandy loam. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Blackhall sandy loam on crests of small hills, Cushool sandy loam and McFadden fine sandy loam on the hillsides, Rock River sandy loam intermixed with the Edlin and Ryan Park soils, and Zeomont loamy sand on small stable dunes. Included areas make up 15 percent of the total acreage.

The Edlin soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone. The surface layer is typically pale brown sandy loam 3 inches thick. The upper part of the subsoil is brown sandy loam 13 inches thick. The next 14 inches is pale brown sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown sandy loam. In some areas the surface layer is fine sandy loam.

Permeability of the Edlin soils is moderately rapid. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

The Ryan Park soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone. The surface layer is typically brown sandy loam 2 inches thick. The upper part of the subsoil is brown sandy loam 10 inches thick. The next 24 inches is light yellowish brown sandy loam. The next part, to a depth of 48 inches, is very pale brown loamy sand. The lower part of the subsoil, to a depth of 60 inches or more, is white loamy sand.

Permeability of the Ryan Park soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly needleandthread, thickspike wheatgrass, Indian ricegrass, threadleaf sedge, and silver sagebrush. As the range condition deteriorates, silver sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. This unit is poorly suited to livestock watering ponds because of the seepage potential.

This map unit is in capability subclass IVe, nonirrigated.

The Edlin and the Ryan Park soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Blackhall and McFadden soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Cushool soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Rock River soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Zeomont soils are in the Sands, 10 to 14 inch ppt., High Plains Southeast range site.

178—Effington-Uffens complex, 0 to 6 percent slopes

This map unit is on terraces and alluvial fans. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,800 to 6,200 feet. The annual precipitation is 7 to 9 inches, the annual air temperature is 44 to 46 degrees F, and the frost-free period is 110 to 120 days.

This unit is 50 percent Effington silty clay loam and 40 percent Uffens sandy loam. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Typic Torrifluvents adjacent to drainageways. Included areas make up 10 percent of the total acreage.

The Effington soils are very deep and well drained. They formed in alluvium derived dominantly from sodic shale. The surface layer is typically light brownish gray silty clay loam 2 inches thick. The upper 8 inches of the subsoil is light olive brown and light brownish gray, very strongly alkaline silty clay loam. The next 8 inches is light brownish gray, very strongly alkaline silty clay. The next part, to a depth of 44 inches, is pale olive and light olive gray, very strongly alkaline, moderately saline silty clay loam. The lower part of the subsoil, to a depth of 60 inches or more, is light olive gray, strongly alkaline, moderately saline silty clay loam.

Permeability of the Effington soils are very slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more for plants that can tolerate saline and alkaline soils, but it is 5 to 10 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

The Uffens soils are very deep and well drained. They formed in alluvium derived dominantly from sodic shale. The upper part of the surface layer is typically pale brown sandy loam 2 inches thick. The lower part is light yellowish brown sandy loam 2 inches thick. The upper 12 inches of the subsoil is brown and light yellowish brown, very strongly alkaline sandy clay loam. The next 20 inches is light yellowish brown, very strongly alkaline, slightly saline loam. The lower part of the subsoil, to a depth of 60 inches or more, is brown, strongly alkaline, slightly saline, gypsiferous loam. In some areas the surface layer is loam.

Permeability of the Uffens soils is moderately slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more for plants that can tolerate saline and alkaline soils, but it is 5 to 15 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, Indian ricegrass, bottlebrush squirreltail, birdfoot sagebrush, and gardner saltbush. As the range condition deteriorates, birdfoot sagebrush increases. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 200 pounds of air-dry vegetation in normal years. Production ranges from 300 pounds in favorable years to 100 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by low annual precipitation and the alkalinity and salinity of the soils. Loss of the surface layer results in a severe decrease in productivity and in the potential of this unit to produce plants suitable for grazing. These soils are only moderately well suited to livestock watering ponds because of the slope.

This map unit is in capability subclass VIs, nonirrigated.

The Effington and Uffens soils are in the Impervious Clay, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Typic Torrifluvents are in the Saline Lowland, 5 to 9 inch ppt., Wind River Basin range site or in the Loamy, 5 to 9 inch ppt., Wind River Basin range site.

179—Enos-Wallson association, rolling

This map unit is on hills and adjacent alluvial fans. The slope is 6 to 15 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,800 to 6,200 feet. The annual precipitation is 7 to 9 inches, the annual air temperature is 44 to 46 degrees F, and the frost-free period is 110 to 120 days.

This unit is 40 percent Enos loamy sand and 40 percent Wallson loamy fine sand. The Enos soils are on hillsides with 6 to 15 percent slopes and the Wallson soils are on alluvial fans and foot slopes with 6 to 10 percent slopes.

Included in this unit on hill crests are 5 percent Bributte silty clay loam, 10 percent Oceanet sandy loam, and 5 percent Rock outcrop.

The Enos soils are moderately deep and well drained. They formed in slopewash alluvium derived dominantly from sandstone. The surface layer is typically pale brown loamy sand 2 inches thick. The upper 13 inches of the subsoil is yellowish brown sandy loam. The lower part of the subsoil is pale brown sandy loam 19 inches thick. Soft sandstone is at a depth of 34 inches. In some areas the surface layer is sandy loam.

Permeability of the Enos soils are moderately rapid. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Wallson soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone. The surface layer is typically pale brown loamy fine sand 2 inches thick. The upper part of the subsoil is yellowish brown sandy loam 12 inches thick. The next 34 inches is light brownish gray and light yellowish brown sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is light yellowish brown loamy sand. In some areas the surface layer is sandy loam.

Permeability of the Wallson soils are moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly needleandthread, Indian ricegrass, sand dropseed, thickspike wheatgrass, and big sagebrush. As the range condition deteriorates, blue grama, Sandberg bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, annuals and pricklypear invade. The potential plant community produces about 400 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the low annual precipitation. This unit is poorly suited to livestock watering ponds because of the depth to bedrock of the Enos soils and the slope and seepage potential of both soils.

This map unit is in capability subclass VIe, nonirrigated.

The Enos and the Wallson soils are in the Sandy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Bributte soils are in the Shallow Loamy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Oceanet soils are in the Shallow Sandy, 5 to 9 inch ppt., Wind River Basin range site.

180—Farlow, moist-Starley-Rock outcrop complex, 40 to 65 percent slopes

This map unit is on mountains (fig. 7). The native vegetation is mainly grasses, forbs, shrubs, and conifers. Elevation is 6,500 to 7,900 feet. The annual precipitation is 20 to 25 inches, the annual air temperature is 33 to 37 degrees F, and the frost-free period is less than 80 days. Frost commonly occurs during summer months.

This unit is 45 percent Farlow extremely cobbly loam, 25 percent Starley very cobbly loam, and 15 percent Rock outcrop. The Farlow soils are on mountain slopes, the Starley soils are on crests, and Rock outcrop is on crests and ledges. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent moderately deep extremely cobbly loam soils intermixed with the Farlow soils; and 5 percent very deep, poorly drained, very stony loam soils adjacent to stream channels.

The Farlow soils are very deep and well drained. They formed in colluvium derived dominantly from limestone. The surface is typically covered with a 1-inch-thick layer of partially decomposed pine needles and other forest litter. The surface layer is dark brown extremely cobbly loam 3 inches thick. The upper part of the subsoil is brown extremely cobbly loam 11 inches thick. The lower part of the subsoil, to a depth of 60 inches or more, is pale brown extremely cobbly loam containing a high amount of calcium carbonate.

Permeability of the Farlow soils is moderate. Available water capacity is very low. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Starley soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from limestone. The surface layer is typically dark grayish brown very cobbly loam 7 inches thick. The subsoil is pale brown very cobbly loam 2 inches thick. Hard fractured limestone is at a depth of 9 inches.

Permeability of the Starley soils are moderate. Available water capacity is very low. The effective rooting depth is 7 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

Rock outcrop consists of exposures of hard limestone.

Most areas of this unit are used for wildlife habitat and summer livestock grazing. A few areas are used for homesite development. The Farlow soils are also used for timber production.

The potential plant community on the Farlow soils is mainly ponderosa pine and subalpine fir with an understory of spike fescue and Oregongrape. Production of vegetation suitable for livestock is limited because the tree canopy cover limits the understory growth.

The potential plant community on the Starley soils is mainly bluebunch wheatgrass, Idaho fescue, needleandthread, Parry danthonia, antelope bitterbrush, and black sagebrush. As the range condition deteriorates, juniper and unpalatable forbs increase. As the range condition further deteriorates, broom snakeweed and annuals invade. The potential plant community produces about 500 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 300 pounds in unfavorable years. The slope limits access by livestock and results in overgrazing of the less sloping areas.

If the Farlow soils are used for the production of ponderosa pine and subalpine fir, the main limitations are the slope, the content of rock fragments in the soils, and slow regrowth due to the cold climate and short growing season. The available water capacity of the soils also limits productivity. The site index for ponderosa pine ranges from 40 to 45. The site index for subalpine fir ranges from 45 to 50. Conventional methods of harvesting timber are difficult to use because of the slope. Plant competition delays natural regeneration, but does not prevent the eventual development of a fully stocked, normal stand of trees. The trees are subject to windthrow due to the high content of rock fragments which limit the rooting depth.

If the Farlow soils are used for homesite development, the main limitations are the slope and the content of rock fragments. If the Starley soils are used for homesite development, the main limitations are the slope, content

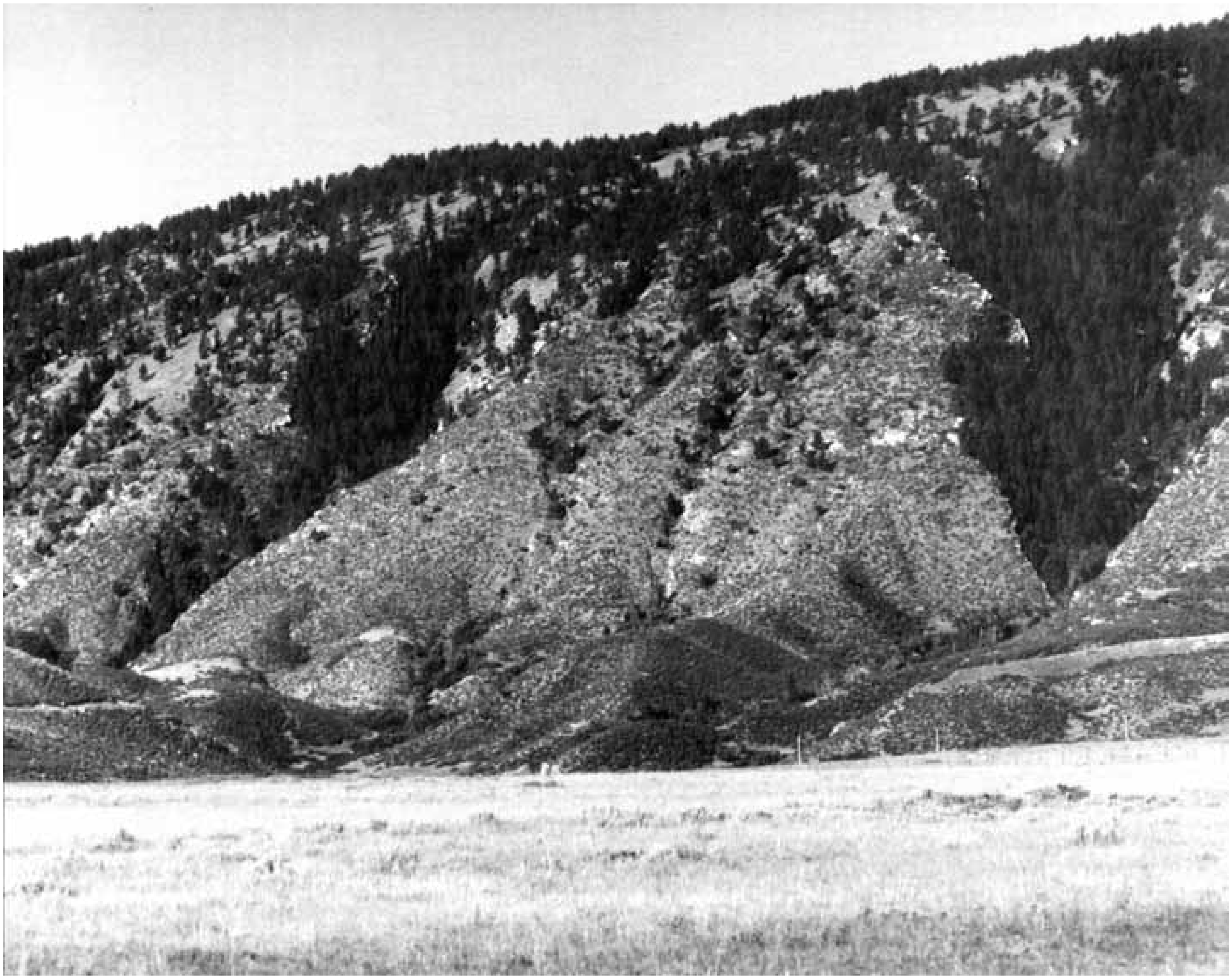

Figure 7.—An area of Farlow, moist-Starley-Rock outcrop complex, 40 to 65 percent slopes.

of rock fragments, and the depth to bedrock. The slope and the depth to bedrock are a concern in the installation of septic tank absorption fields. Installation of septic tank absorption lines in or on the bedrock is not recommended due to the possibility of inadequate filtration and contamination of ground water supplies. Effluent can also surface downslope, creating a health hazard.

The Farlow and Starley soils are in capability subclass VIIs, nonirrigated. The Rock outcrop is in capability class VIII.

The Farlow soils are in a woodland site. The Starley soils are in the Very Shallow, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of moderately deep extremely cobbly loam soils are in a woodland site. Inclusions of very deep, poorly drained, stony loam soils are in the Subirrigated, 15 to 19 inch ppt., Foothills and Mountains Southeast range site.

181—Farlow-Starley association, moderately steep

This map unit is on hills and mountain foot slopes below limestone ridges. The slope is 10 to 30 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 7,800 to 8,700 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 32 to 35 degrees F, and the frost-free period is less than 80 days. Frost commonly occurs during summer months.

This unit is 60 percent Farlow cobbly loam and 20 percent Starley very cobbly loam. The Farlow soils are on mountain foot slopes with 15 to 30 percent slopes and the Starley soils are on hills with 10 to 20 percent slopes.

Included in this unit are 10 percent very deep soils with a thick dark loamy surface layer in concave areas and 10 percent limestone Rock outcrop on ledges and hill crests.

The Farlow soils are deep and well drained. They formed in colluvium derived dominantly from limestone. The surface layer is typically dark brown cobbly loam 8 inches thick. The upper part of the subsoil is pale brown very cobbly loam 9 inches thick. The lower part of the subsoil is very pale brown very cobbly loam 33 inches thick. Hard fractured limestone is at a depth of 50 inches.

Permeability of the Farlow soils is moderate. Available water capacity is low. The effective rooting depth is 40 to 60 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Starley soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from limestone. The surface layer is typically dark brown very cobbly loam 4 inches thick. The subsoil is brown very cobbly loam 10 inches thick. Hard, fractured limestone is at a depth of 14 inches.

Permeability of the Starley soils is moderate. Available water capacity is very low. The effective rooting depth is 7 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for summer livestock grazing and wildlife habitat.

The potential plant community on the Farlow soils is mainly Columbia needlegrass, Idaho fescue, spike fescue, and bluebunch wheatgrass. As the range condition deteriorates, Sandberg bluegrass, prairie junegrass, big sagebrush, and threadleaf sedge increase in abundance. As the range condition further deteriorates, broom snakeweed, curlycup gumweed, and annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 800 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and the content of rock fragments in the soils. The Farlow soils are poorly suited to livestock watering ponds because of the slope and the content of cobbles.

The potential plant community on the Starley soils is mainly Columbia needlegrass, Idaho fescue, and bluebunch wheatgrass. As the range condition deteriorates, unpalatable forbs and juniper increase in abundance. As the range condition further deteriorates, broom snakeweed and annuals invade. The potential plant community produces about 600 pounds of air-dry vegetation in normal years. Production ranges from 800 pounds in favorable years to 400 pounds in unfavorable years. Production of vegetation suitable for livestock grazing is limited by the available water capacity and the depth of the soils. The Starley soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

This map unit is in capability subclass VIIs, nonirrigated.

The Farlow soils are in the Shallow Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site. The Starley soils are in the Very Shallow, 15 to 19 inch ppt., Foothills and Mountains East range site. The inclusions of very deep soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site.

182—Fiveoh-Thermopolis association, hilly

This map unit is on hills and adjacent alluvial fans. The slope is 6 to 30 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,200 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 100 to 110 days.

This unit is 50 percent Fiveoh loam and 35 percent Thermopolis loam. The Fiveoh soils are on foot slopes and alluvial fans with 6 to 15 percent slopes and the Thermopolis soils are on hill crests and hillsides with 10 to 30 percent slopes.

Included in this unit are Buffcreek gravelly loam on benches, Rencot very gravelly loam on hill crests, very deep saline loam soils on alluvial fans, and Rock outcrop on hill crests. Included areas make up 15 percent of the total acreage.

The Fiveoh soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone and siltstone. The surface layer is typically reddish brown loam 5 inches thick. The subsoil is reddish brown and red loam 23 inches thick. The substratum, to a depth of 60 inches or more, is red loam. In some areas the surface layer is fine sandy loam.

Permeability of the Fiveoh soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

Thermopolis soils are shallow and well drained. They formed in residuum and slopewash alluvium derived dominantly from sandstone and siltstone. The surface layer is typically red loam 5 inches thick. The underlying material is red loam 11 inches thick. Soft red sandstone is at a depth of 16 inches. In some areas 20 percent of the surface is covered by channers.

Permeability of Thermopolis soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Fiveoh soils is mainly western wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. Proper management of livestock grazing helps to protect the soils from excessive erosion. These soils are only moderately well suited to livestock watering ponds because of the seepage potential and the slope.

The potential plant community on Thermopolis soils is mainly bluebunch wheatgrass, western wheatgrass, mutton bluegrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. Proper management of livestock grazing helps to protect the soils from excessive erosion. The Thermopolis soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Fiveoh soils are in capability subclass IVe, nonirrigated. The Thermopolis soils are in capability subclass VIIe, nonirrigated.

The Fiveoh soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Thermopolis soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Buffcreek soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Rencot soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of very deep saline loam soils are in the Saline Upland, 10 to 14 inch ppt., High Plains Southeast range site.

183—Forelle loam, 2 to 9 percent slopes

These very deep, well drained soils are on plateaus and alluvial fans. They formed in alluvium derived from various sources. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 39 to 43 degrees F, and the frost-free period is 90 to 110 days.

The surface layer is typically grayish brown loam 5 inches thick. The upper 5 inches of the subsoil is grayish brown loam. The next 10 inches is brown clay loam. The lower part of the subsoil, to a depth of 60 inches or more, is light gray loam. In some areas the surface layer is sandy loam.

Included in this unit are small areas of Alcova fine sandy loam and Diamondville loam on gently sloping convex slopes, Pinelli clay loam in swales and along drainageways, and Poposhia very fine sandy loam on foot slopes. Included areas make up 20 percent of the total acreage.

Permeability of the Forelle soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, mutton bluegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. The Forelle soils are only moderately well suited to livestock watering ponds because of the seepage potential and the slope.

This map unit is in capability subclass IVe, nonirrigated. It is in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

184—Forelle-Diamondville complex, 3 to 15 percent slopes

This map unit is on hills and adjacent alluvial fans. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

This unit is 45 percent Forelle loam and 35 percent Diamondville fine sandy loam. The Forelle soils are on foot slopes and alluvial fans with 3 to 6 percent slopes and the Diamondville soils are on back slopes and foot slopes with 6 to 15 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Blazon loam on hill crests, Bosler sandy loam on nearly level slopes, and shallow gravelly soils on hill crests and knobs. Included areas make up 20 percent of the total acreage.

The Forelle soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically brown loam 3 inches thick. The upper 5 inches of the subsoil is yellowish brown loam. The next 11 inches is brown clay loam. The next part, to a depth of 42 inches, is light brownish gray and brown clay loam. The lower part of the subsoil, to a depth of 60 inches or more, is pale brown loam.

Permeability of the Forelle soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

The Diamondville soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived from sandstone, siltstone, and shale. The surface layer is typically pale brown fine sandy loam 3 inches thick. The upper 13 inches of the subsoil is brown clay loam. The next 4 inches is light yellowish brown clay loam. The lower part of the subsoil is light yellowish brown loam 6 inches thick. Soft siltstone is at a depth of 26 inches. In some areas the surface layer is loam.

Permeability of the Diamondville soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, mutton bluegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. The Forelle soils are only moderately well suited to livestock watering ponds because of the seepage potential and the slope. The Diamondville soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

This map unit is in capability subclass IVe, nonirrigated.

The Forelle and Diamondville soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Blazon and shallow gravelly soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Bosler soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

185—Forelle-Lupinto association, rolling

This map unit is on alluvial fans and fan terraces. The slope is 4 to 20 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,100 to 6,500 feet. The annual precipitation is 10 to 12 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

This unit is 50 percent Forelle loam and 35 percent Lupinto gravelly loam. The Forelle soils are on alluvial fans with 4 to 10 percent slopes and the Lupinto soils are on fan terraces with 10 to 20 percent slopes.

Included in this unit are 10 percent Diamondville loam on foot slopes of adjacent hills and fan terraces and 5 percent Worfman sandy loam on knolls intermixed with the Lupinto soils.

The Forelle soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically brown loam 3 inches thick. The upper part of the subsoil is brown clay loam 10 inches thick. The lower part of the subsoil, to a depth of 60 inches or more, is grayish brown loam.

Permeability of the Forelle soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Lupinto soils are very deep and well drained. They formed in alluvium derived from various sources. 30 percent of the surface is typically covered with gravel or channers. The surface layer is brown gravelly loam 3 inches thick. The upper part of the subsoil is brown gravelly clay loam 7 inches thick. The lower part of the subsoil is light yellowish brown very gravelly loam to a depth of 60 inches or more.

Permeability of the Lupinto soils is moderate. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Forelle soils is mainly western wheatgrass, needleandthread, big sagebrush, mutton bluegrass, and bluebunch wheatgrass. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. The Forelle soils are only moderately well suited to livestock watering ponds because of the seepage potential and the slope.

The potential plant community on the Lupinto soils is mainly bluebunch wheatgrass, western wheatgrass, needleandthread, black sagebrush, and mutton bluegrass. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils. These soils are poorly suited to livestock watering ponds because of the slope.

The Forelle soils are in capability subclass IVe, nonirrigated. The Lupinto soils are in capability subclass VIe, nonirrigated.

The Forelle soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Lupinto soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Diamondville soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Worfman soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

186—Forkwood-Keyner loams, 3 to 10 percent slopes

This map unit is on alluvial fans and terraces. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,200 to 6,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 40 percent Forkwood loam and 40 percent Keyner loam. The Forkwood soils are on slightly convex slopes of 3 to 10 percent, and the Keyner soils are on slightly concave slopes of 3 to 6 percent. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Absted fine sandy loam intermixed with the Keyner soils and 5 percent Ulm loam and 5 percent Zigweid loam intermixed with the Forkwood soils.

The Forkwood soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically brown loam 7 inches thick. The upper part of the subsoil is light yellowish brown clay loam 17 inches thick. The lower part of the subsoil, to a depth of 60 inches or more, is light yellowish brown loam. In some areas the surface layer is sandy loam.

Permeability of the Forkwood soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Keyner soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically brown loam 3 inches thick. The upper 11 inches of the subsoil is grayish brown clay loam. The lower 9 inches of the subsoil is light brownish gray, very strongly alkaline, slightly saline clay loam. The substratum, to a depth of 60 inches or more, is light brownish gray, very strongly alkaline, moderately saline loam. In some areas the surface layer is sandy loam.

Permeability of the Keyner soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more for plants that can tolerate saline and alkaline soils, but it is 10 to 20 inches for plants that cannot tolerate them. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, bluebunch wheatgrass, needleandthread, mutton bluegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. The Forelle soils are only moderately well suited to livestock watering ponds because of the seepage potential. The Keyner soils are only moderately well suited to livestock watering ponds because of the slope.

The Forkwood soils are in capability subclass IVe, nonirrigated. The Keyner soils are in capability subclass IVs, nonirrigated.

The Forkwood and Keyner soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Absted and Zigweid soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Ulm soils are in the Clayey, 10 to 14 inch ppt., High Plains Southeast range site.

187—Forkwood-Ulm complex, 0 to 6 percent slopes

This map unit is on alluvial fans and terraces. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 40 percent Forkwood loam and 40 percent

Ulm clay loam. The Forkwood soils are on convex slopes of 0 to 6 percent, and the Ulm soils are on concave slopes of 0 to 3 percent. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Absted loam intermixed with the Ulm soils and 10 percent Keyner sandy loam intermixed with the Forkwood soils.

The Forkwood soils are very deep and well drained. They formed in alluvium derived dominantly from shale and sandstone. The surface layer is typically pale brown loam 2 inches thick. The upper part of the subsoil is brown clay loam 11 inches thick. The next 3 inches is pale brown loam. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown loam.

Permeability of the Forkwood soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

The Ulm soils are very deep and well drained. They formed in alluvium derived dominantly from shale and sandstone. The surface layer is typically grayish brown clay loam 2 inches thick. The upper 7 inches of the subsoil is grayish brown clay loam. The next 7 inches is light olive brown clay loam. The lower 15 inches of the subsoil is light brownish gray clay loam. The substratum, to a depth of 60 inches or more, is grayish brown clay loam. In some areas the surface layer is loam or sandy clay loam.

Permeability of the Ulm soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Forkwood soils is mainly western wheatgrass, bluebunch wheatgrass, needleandthread, mutton bluegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. These soils are only moderately well suited to livestock watering ponds because of the seepage potential and the slope.

The potential plant community on the Ulm soils is mainly thickspike wheatgrass, bluebunch wheatgrass, green needlegrass, and sagebrush. As the range condition deteriorates, forbs and big sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,000 pounds of air-dry vegetation in normal years. Production ranges from 1,300 pounds in favorable years to 500 pounds in unfavorable years. These soils are well suited to livestock watering ponds.

This map unit is in capability subclass IVe, nonirrigated.

The Forkwood soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Ulm soils are in the Clayey, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Absted and Keyner soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

188—Forkwood-Zigweid association, sloping

This map unit is on alluvial fans and foot slopes. The slope is 3 to 15 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,200 to 6,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 50 percent Forkwood fine sandy loam and 30 percent Zigweid loam. The Forkwood soils are on alluvial fans with 3 to 12 percent slopes and the Zigweid soils are on foot slopes with 6 to 15 percent slopes.

Included in this unit are small areas of Amodac loam and Cushman loam on convex slopes. Also included are small areas of Shingle loam soils on ridge crests. Included areas make up 20 percent of the total acreage.

Forkwood soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically brown fine sandy loam 4 inches thick. The upper part of the subsoil is yellowish brown loam 18 inches thick. The lower 13 inches of the subsoil is light yellowish brown loam. The substratum, to a depth of 60 inches or more, is light yellowish brown loam. In some areas the surface layer is loam.

Permeability of the Forkwood soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Zigweid soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically pale brown loam 3 inches thick. The upper part of the subsoil is pale brown loam 16 inches thick. The lower part of the subsoil, to a depth of 60 inches or more, is light brownish gray loam.

Permeability of the Zigweid soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, bluebunch wheatgrass, needleandthread, mutton bluegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. This unit is only moderately well suited to livestock watering ponds because of the seepage potential and the slope.

This map unit is in capability subclass IVe, nonirrigated.

The Forkwood and Zigweid soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Amodac soils are in the Saline Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Cushman soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Shingle soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

189—Gateridge-Taluce Variant association, steep

This map unit is on hills. The slope is 10 to 45 percent. The native vegetation is mainly conifers, grasses, and shrubs. Elevation is 5,800 to 6,200 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 40 to 42 degrees F, and the frost-free period is 90 to 110 days.

This unit is 65 percent Gateridge fine sandy loam and 20 percent Taluce Variant fine sandy loam. The Gateridge soils are on hillsides and the Taluce Variant soils are on hill crests.

Included in this unit are 10 percent Worf Variant fine sandy loam and 5 percent moderately deep sandy soils on hill crests.

The Gateridge soils are shallow and well drained. They formed in residuum derived dominantly from sandstone and shale. The surface is typically covered with a 3-inch-thick mat of pine needles and other forest litter. The surface layer is very pale brown fine sandy loam 5 inches thick. The subsoil is brown sandy clay loam 9 inches thick. The substratum is light red clay 5 inches thick. Soft sandstone interbedded with shale is at a depth of 19 inches. In some areas the surface is 10 to 20 percent covered with channers and flagstones.

Permeability of the Gateridge soils is moderate in the subsoil and slow in the substratum. Available water capacity is very low. The effective rooting depth is 15 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The Taluce Variant soils are shallow and well drained. They formed in residuum derived dominantly from sandstone. The surface layer is typically brown fine sandy loam 5 inches thick. The underlying material is light brown fine sandy loam 10 inches thick. Soft sandstone is at a depth of 15 inches. In some areas the surface is 10 to 20 percent covered with channers and flagstones.

Permeability of the Taluce Variant soils is moderately rapid. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for wood products.

The potential plant community on the Gateridge soils is mainly ponderosa pine with an understory of bluebunch wheatgrass, Columbia needlegrass, spike fescue, and Idaho fescue. The potential production in normal years varies from 500 pounds of air-dry vegetation per acre in areas with an open canopy to 150 pounds or less in areas with a closed canopy. Production of vegetation suitable for livestock grazing is limited mainly by the canopy cover which hinders the understory growth. It is also limited by the available water capacity and the depth of the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The potential plant community on the Taluce Variant soils is mainly prairie sandreed, needleandthread, western wheatgrass, and bluebunch wheatgrass. As the range condition deteriorates, threadleaf sedge and fringed sagewort increase in abundance. As the range condition further deteriorates, broom snakeweed and cheatgrass invade. The potential plant community produces about 1,400 pounds of air-dry vegetation in normal years. Production ranges from 1,800 pounds in favorable years to 900 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

If the Gateridge soils are used for the production of ponderosa pine, the main limitations are the depth and the available water capacity of the soils. The site index for ponderosa pine ranges from 35 to 44. It can produce 12 cords per acre in a stand of trees that are 5 inches in diameter at a height of 1 foot. The main concerns in producing and harvesting timber are the depth to bedrock, slow regeneration, hazard of water erosion, and the difficulty of harvesting. Plant competition delays natural regeneration, but does not prevent the eventual development of a fully stocked, normal stand of trees. The available water capacity of the soils generally influences seedling survival in areas where understory plants are numerous. Conventional methods of harvesting timber are difficult to use because of the slope.

This map unit is in capability subclass VIIe, nonirrigated.

The Gateridge soils are in woodland. The Taluce Variant soils are in the Shallow Sandy, 15 to 19 inch ppt., Northern Plains range site. Inclusions of Worf Variant soils are in the Shallow Loamy, 15 to 19 inch ppt., Northern Plains range site. Inclusions of moderately deep sandy soils are in the Sandy, 15 to 19 inch ppt., Northern Plains range site.

190—Griffy sandy loam, 2 to 15 percent slopes

These very deep, well drained soils are on hills and alluvial fans. They formed in alluvium derived dominantly from sandstone and sandy shale. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,500 to 6,300 feet. The annual precipitation is 7 to 9 inches, the annual air temperature is 44 to 46 degrees F, and the frost-free period is 110 to 130 days.

The surface layer is typically pale brown sandy loam 2 inches thick. The upper 16 inches of the subsoil is yellowish brown sandy clay loam. The next 6 inches is pale brown sandy loam. The lower 8 inches of the subsoil is light yellowish brown sandy loam. The substratum, to a depth of 60 inches or more, is pale brown loamy sand. In some areas the surface layer is loamy fine sand.

Included in this unit are 10 percent Saddle sandy loam on convex slopes and 10 percent Wallson loamy fine sand.

Permeability of the Griffy soils is moderate. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, prairie junegrass, Indian ricegrass, Sandberg bluegrass, and big sagebrush. As the range condition deteriorates, blue grama, Sandberg bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, annuals and pricklypear invade. The potential plant community produces about 400 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the low annual precipitation. This unit is poorly suited to livestock watering ponds because of the seepage potential.

This map unit is in capability subclass VIe, nonirrigated.

The Griffy soils are in the Loamy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Saddle soils are in the Loamy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Wallson soils are in the Sandy, 5 to 9 inch ppt., Wind River Basin range site.

191—Griffy-Emblem fine sandy loams, 0 to 6 percent slopes

This map unit is on alluvial fans and terraces. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,500 to 6,400 feet. The annual precipitation is 7 to 9 inches, the annual air temperature is 44 to 46 degrees F, and the frost-free period is 110 to 120 days.

This unit is 50 percent Griffy fine sandy loam and 35 percent Emblem fine sandy loam. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Uffens very fine sandy loam on nearly level slopes and 10 percent shallow stony soils on steep sides of draws.

The Griffy soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically pale brown fine sandy loam 2 inches thick. The upper 9 inches of the subsoil is yellowish brown sandy clay loam. The next 10 inches is light yellowish brown sandy clay loam. The lower 11 inches of the subsoil is light brownish gray sandy loam. The substratum, to a depth of 60 inches or more, is light yellowish brown loamy sand. In some areas the surface layer is sandy clay loam.

Permeability of the Griffy soils is moderate. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

The Emblem soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically pale brown fine sandy loam 3 inches thick. The upper 14 inches of the subsoil is very pale brown and brown loam. The next 9 inches is very pale brown gravelly sandy clay loam. The lower part of the subsoil, to a depth of 60 inches or more, is light yellowish brown very gravelly loamy sand. In some areas the surface layer is loam.

Permeability of the Emblem soils is moderate in the upper part of the subsoil and rapid in the lower part of the subsoil. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Griffy soils is mainly western wheatgrass, needleandthread, Indian ricegrass, bluebunch wheatgrass, prairie junegrass, Sandberg bluegrass, and big sagebrush. As the range condition deteriorates, blue grama, Sandberg bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, annuals and pricklypear invade. The potential plant community produces about 400 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the low annual precipitation. These soils are poorly suited to livestock watering ponds because of the seepage potential.

The potential plant community on the Emblem soils is mainly western wheatgrass, bluebunch wheatgrass, Indian ricegrass, needleandthread, and big sagebrush. As the range condition deteriorates, blue grama and unpalatable forbs increase in abundance. As the range condition further deteriorates, annuals and pricklypear invade. The potential plant community produces about 250 pounds of air-dry vegetation in normal years. Production ranges from 350 pounds in favorable years to 125 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the low annual precipitation and available water capacity of the soils. Loss of the surface layer results in a severe decrease in the productivity and the potential of these soils to produce plants suitable for grazing. These soils are poorly suited to livestock watering ponds because of the seepage potential.

This map unit is in capability subclass VIe, nonirrigated.

The Griffy soils are in the Loamy, 5 to 9 inch ppt., Wind River Basin range site. The Emblem soils are in the Shallow Loamy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Uffens soils are in the Impervious Clay, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of shallow stony soils are in the Shallow Loamy, 5 to 9 inch ppt., Wind River Basin range site.

192—Grimstone-Grimstone Variant loams, 4 to 35 percent slopes

This map unit is on mountain slopes underlain by vertically interbedded crystalline rocks. The native vegetation is mainly conifers, grasses, forbs, and shrubs. Elevation is 7,700 to 8,100 feet. The annual precipitation is 25 to 35 inches, the annual air temperature is 33 to 36 degrees F, and the frost-free period is less than 70 days. Frost commonly occurs during summer months.

This unit is 50 percent Grimstone loam and 30 percent Grimstone Variant loam. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are Irson very gravelly loam in meadows, very deep clay soils on 4 to 10 percent slopes, very deep poorly drained soils adjacent to streams, and Rock outcrop. Included areas make up 20 percent of the total acreage.

The Grimstone soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived from crystalline rocks. The surface is typically covered with a 1-inch-thick layer of slightly decomposed pine needles and other forest litter. The surface layer is dark grayish brown loam 4 inches thick. The subsurface layer is pale brown loam 12 inches thick. The subsoil is yellowish brown clay loam 10 inches thick. Soft micaceous schist is at a depth of 26 inches.

Permeability of the Grimstone soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Grimstone Variant soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from crystalline rocks. The surface is typically covered with a 1-inch-thick layer of slightly decomposed pine needles and other forest litter. The surface layer is dark brown loam 1 inch thick. The subsoil is yellowish brown very cobbly loam 15 inches thick. The substratum is yellowish brown extremely cobbly sandy clay loam 20 inches thick. Hard micaceous schist is at a depth of 36 inches.

Permeability of the Grimstone Variant soils is moderate. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for wildlife habitat, homesite development, timber production, or for summer livestock grazing.

The potential plant community on this unit is mainly lodgepole pine and subalpine fir, with an understory of spike fescue and Oregongrape. Production of vegetation suitable for livestock grazing is limited mainly by the tree canopy cover, which hinders the understory growth.

If this unit is used for the production of lodgepole pine, the main limitation is slow regrowth due to the cold climate and short growing season. The site index for lodgepole pine ranges from 62 to 75. Plant competition delays natural regeneration but does not prevent the eventual development of a fully stocked, normal stand of trees.

If this unit is used for homesite development, the main limitations are the depth to bedrock and the slope. Cuts needed to provide essentially level building sites will be difficult in areas of the Grimstone Variant soils because of the hard bedrock. Installation of septic tank absorption lines in or on the bedrock is not recommended due to the possibility of inadequate filtration and contamination of ground water supplies. Effluent from septic tank absorption fields can also surface in downslope areas and thus create a hazard to health. The slope is a concern in installing septic tank absorption fields. Absorption lines should be installed on the contour.

This map unit is in capability subclass VIe, nonirrigated.

The Grimstone and Grimstone Variant soils are in woodland. Inclusions of Irson soils are in the Very Shallow, 20+ inch ppt., Mountains range site. Inclusions of deep clay soils are in woodland. Inclusions of deep, poorly drained soils are in the Subirrigated, 20+ inch ppt., Mountains range site.

193—Haverdad loam, 0 to 4 percent slopes

These very deep, well drained soils are on flood plains of the North Platte River and its major tributaries. They formed in alluvium derived from various sources. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

The surface layer is typically brown loam 6 inches thick. The underlying material, to a depth of 60 inches or more, is yellowish brown loam stratified with thin layers of clay loam, silt loam, and sandy clay loam. Very gravelly sand is at a depth of 40 inches or more in some pedons.

Included in this unit are small areas of Clarkelen, gravelly substratum soils intermixed with the Haverdad soils. Also included are Rivra soils in depressions and somewhat poorly or poorly drained soils with thick dark surfaces. Included areas make up 15 percent of the total acreage.

Permeability of the Haverdad soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate. This unit is somewhat protected by major water-control structures, but it is subject to a rare hazard of flooding.

This unit is used mainly for irrigated hay and pasture. It is also used for livestock grazing, wildlife habitat, or for homesite development.

The potential plant community on the Haverdad soils is mainly western wheatgrass, needleandthread, blue grama, and green needlegrass. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. Ashe range condition further deteriorates, pricklypear, cheatgrass, and broom snakeweed invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. These soils are only moderately well suited to livestock watering ponds because of the seepage potential.

If the Haverdad soils are used for irrigated hay and pasture, applications of irrigation water should be adjusted to the available water capacity and water intake rate of the soils and to the crop needs. Irrigation water should be applied carefully to prevent the build up of a high water table. The use of pipe or the lining of irrigation ditches facilitates irrigation and reduces loss of irrigation water due to seepage.

If the Haverdad soils are used for homesite development, the main limitation is the rare hazard of flooding. The permeability and shrink-swell potential are also concerns that should be addressed. Revegetating disturbed areas around construction sites as soon as possible helps to control wind erosion. If a septic tank absorption field is to be used, the limitation of moderate permeability can be overcome by increasing the size of the absorption field. Properly designed building foundations and footings and runoff diverted away from the buildings will help to prevent the structural damage caused by shrinking and swelling.

This map unit is in capability subclasses IIIe, irrigated, and IVe, nonirrigated.

The Haverdad soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Clarkelen soils are in the Sandy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Rivra soils are in the Lowland, 10 to 14 inch ppt., Northern Plains range site. Inclusions of somewhat poorly or poorly drained soils are in the Subirrigated, 10 to 14 inch ppt., Northern Plains range site.

194—Haverdad-Clarkelen complex, 0 to 3 percent slopes

This map unit is on flood plains. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 4,800 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 55 percent Haverdad loam and 35 percent Clarkelen fine sandy loam. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Draknab loamy fine sand and fine textured soils on flood plains; Kishona clay loam on gently sloping alluvial fans; saline Aquic Ustifluvents in swales and adjacent to stream channels; and Haverdad loam, saline soils on flood plains. Included areas make up 10 percent of the total acreage.

The Haverdad soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically light brownish gray loam 3 inches thick. The underlying material, to a depth of 60 inches or more, is light brownish gray loam stratified with thin layers of silt loam, very fine sandy loam, and sandy loam. In some areas the surface layer is clay loam or very fine sandy loam.

Permeability of the Haverdad soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate. These soils are subject to a rare hazard of flooding.

The Clarkelen soils are very deep and somewhat excessively drained. They formed in alluvium derived from various sources. The surface layer is typically light brownish gray fine sandy loam 6 inches thick. The underlying material, to a depth of 60 inches or more, is light brownish gray fine sandy loam stratified with thin layers of loam and loamy sand. In some areas the surface layer is loamy sand or loam.

Permeability of the Clarkelen soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe. These soils are subject to a rare hazard of flooding.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay and pasture (fig. 8).

The potential plant community on the Haverdad soils is mainly western wheatgrass, slender wheatgrass, basin wildrye, Canby bluegrass, and silver sagebrush. As the range condition deteriorates, western wheatgrass and bluegrasses increase in abundance. As the range condition further deteriorates, Kentucky bluegrass and annual grasses invade. The potential plant community produces about 1,800 pounds of air-dry vegetation in normal years. Production ranges from 2,200 pounds in favorable years to 1,200 pounds in unfavorable years. The Haverdad soils are only moderately well suited to livestock watering ponds because of the seepage potential.

The potential plant community on the Clarkelen soils is mainly western wheatgrass, bluebunch wheatgrass, needleandthread, Indian ricegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. The Clarkelen soils are poorly suited to livestock watering ponds because of the seepage potential.

If the amount of plant cover on this unit is reduced, the hazards of gullying, streambank cutting, and sheet erosion when the soils flood are increased.

If this unit is used for irrigated hay and pasture, irrigation water should be applied carefully. The Clarkelen soils will require more frequent irrigations due to its lower available water capacity. Applications of irrigation water should be adjusted to the available water capacity and water intake rate of the soils and to the crop needs. The use of pipe or the lining of irrigation ditches facilitates irrigation and reduces loss of irrigation water from seepage.

This map unit is in capability subclasses IIIe, irrigated, and IVe, nonirrigated.

The Haverdad soils are in the Loamy Overflow, 10 to 14 inch ppt., High Plains Southeast range site. The Clarkelen soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Haverdad loam, saline soils are in the Saline Lowland, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Draknab and fine textured soils are in the Lowland, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Kishona soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of saline Aquic Ustifluvents are in the Saline Subirrigated, 10 to 14 inch ppt., High Plains Southeast range site. In the east-central part of the survey area, the Haverdad soils are in the Loamy Overflow, 10 to 14 inch ppt., Northern Plains range site and the Clarkelen soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site.

195—Haverdad-Clarkelen complex, saline, 0 to 3 percent slopes

This map unit is on flood plains. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 4,800 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 45 percent Haverdad loam and 35 percent Clarkelen sandy loam. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Draknab loamy fine sand and fine textured soils on flood plains; Petrie

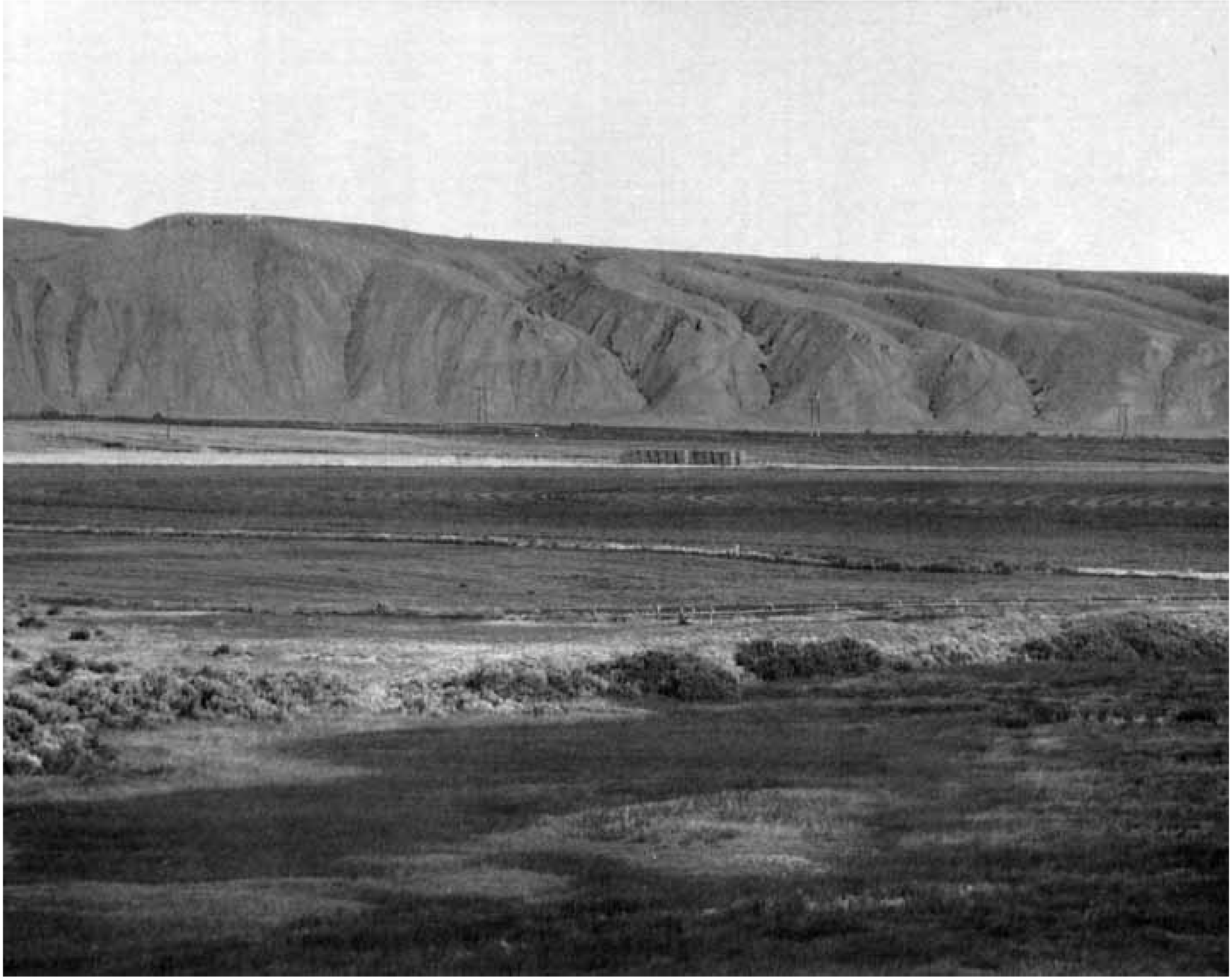

Figure 8.—An area of Haverdad-Clarkelen complex, 0 to 3 percent slopes, used for irrigated hay. The Typic Fluvaquents-Aquic Ustifluvents, saline, complex, 0 to 3 percent slopes, is in the area of wetland in the foreground; the Lolite-Rock outcrop complex, 10 to 40 percent slopes, is on the hills in the background.

clay loam, dry, and Petrie clay loam on alluvial fans; saline Aquic Ustifluvents in swales; and similar soils that are frequently flooded. Included areas make up 20 percent of the total acreage.

The Haverdad soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically brown loam 2 inches thick. The underlying material, to a depth of 60 inches or more, is pale brown loam stratified with thin layers of sandy loam, clay loam, and silt loam. The underlying material is slightly saline. In some areas the surface layer is sandy loam, silt loam, or clay loam.

Permeability of the Haverdad soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate. These soils are subject to a rare hazard of flooding.

The Clarkelen soils are very deep and somewhat excessively drained. They formed in alluvium derived from various sources. The surface layer is typically light brownish gray sandy loam 2 inches thick. The underlying material, to a depth of 60 inches or more, is light yellowish brown sandy loam stratified with thin layers of loam and fine sandy loam. The underlying material is slightly saline. In some areas the surface layer is sandy clay loam.

Permeability of the Clarkelen soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe. These soils are subject to a rare hazard of flooding.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay and pasture.

The potential plant community on this unit is mainly alkali sacaton, basin wildrye, western wheatgrass, and black greasewood. As the range condition deteriorates, inland saltgrass and greasewood increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,800 pounds of air-dry vegetation in normal years. Production ranges from 2,500 pounds in favorable years to 1,200 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity and alkalinity of the soils. The Haverdad soils are only moderately well suited to livestock watering ponds because of the seepage potential. The Clarkelen soils are poorly suited to livestock watering ponds because of the seepage potential.

If this unit is used for irrigated hay and pasture, the main limitation is the salinity and alkalinity of the soils. Species of plants that tolerate slightly saline and alkaline soils should be planted to maximize production. Irrigation water should be applied at a rate that ensures optimum production without excessive deep percolation. A small amount of deep percolation is needed for the leaching of salts out of the root zone. Applications of irrigation water should be adjusted to the available water capacity and water intake rate of the soils and to the crop needs. The Clarkelen soils will require more frequent irrigations due to the available water capacity. Sprinkler irrigation is the most suitable method of applying water. The use of pipe or the lining of irrigation ditches facilitates irrigation and reduces loss of irrigation water from seepage.

This map unit is in capability subclasses IVs, irrigated, and VIs, nonirrigated.

The Haverdad and Clarkelen soils are in the Saline Lowland, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Draknab and fine textured soils are in the Lowland, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Petrie soils are in the Saline Upland, 10 to 14 inch ppt., High Plains Southeast range site or in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of saline Aquic Ustifluvents are in the Saline Subirrigated, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of similar soils that are frequently flooded are in the Loamy Overflow, 10 to 14 inch ppt., High Plains Southeast range site. A few delineations of this unit in the east-central part of the survey area are in Saline Lowland, 10 to 14 inch ppt., Northern Plains range sites.

196—Havermom fine sandy loam, 0 to 5 percent slopes

These very deep, moderately well drained soils are on flood plains. They formed in alluvium derived from various sources. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 7,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 38 to 42 degrees F, and the frost-free period is 90 to 110 days.

The surface layer is typically light brownish gray fine sandy loam 4 inches thick. The underlying material, to a depth of 60 inches or more, is very strongly alkaline and moderately saline and is light brownish gray loam stratified with thin layers of fine sandy loam, silty clay loam, and clay loam. In some areas the surface layer is loam.

Included in this unit are 5 percent Tisworth sandy loam on terraces and 10 percent nonsaline and nonalkaline soils similar to and intermixed with Havermom soils.

Permeability of the Havermom soils is moderately slow. Available water capacity is high. The effective rooting depth is 60 inches or more for plants that can tolerate saline and alkaline soils, but it is 5 to 15 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe. These soils are subject to a rare hazard of flooding. A seasonal high water table is at a depth of 4 to 6 feet from March through June.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly alkali sacaton, basin wildrye, alkali bluegrass, and greasewood. As the range condition deteriorates, inland saltgrass and greasewood increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 3,000 pounds of air-dry vegetation in normal years. Production ranges from 3,400 pounds in favorable years to 2,500 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity and alkalinity of the soils. If the amount of plant cover is reduced, the hazards of gullying, streambank cutting, and sheet erosion when the soils are flooded are increased. These soils are well suited to livestock watering ponds.

This map unit is in capability subclass VIs, nonirrigated.

The Havermom soils are in the Saline Subirrigated, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Tisworth soils are in the Saline Lowland, 10 to 14 inch ppt., High Plains Southeast range site.

Inclusions of nonsaline and nonalkaline soils are in the Loamy Overflow, 10 to 14 inch ppt., High Plains Southeast range site.

197—Hawkstone loamy sand, 5 to 20 percent slopes

These very deep, well drained soils are on hills. They formed in slopewash alluvium, eolian deposits, and residuum derived dominantly from sandstone. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 42 degrees F, and the frost-free period is 90 to 110 days.

The surface layer is typically brown loamy sand 5 inches thick. The upper 9 inches of the subsoil is yellowish brown sandy loam. The lower 16 inches of the subsoil is brownish yellow sandy loam. The substratum, to a depth of 60 inches or more, is brownish yellow sandy loam. In some areas the surface layer is sandy loam or loamy coarse sand.

Included in this unit are 10 percent Ryan Park loamy sand on foot slopes and alluvial fans and 10 percent Blackhall gravelly sandy loam on hill crests.

Permeability of the Hawkstone soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is severe. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly needleandthread, thickspike wheatgrass, Indian ricegrass, threadleaf sedge, and silver sagebrush. As the range condition deteriorates, silver sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. This unit is poorly suited to livestock watering ponds because of the seepage potential and the slope.

This map unit is in capability subclass IVe, nonirrigated.

The Hawkstone soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Ryan Park soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Blackhall soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

198—Hazton-Rock outcrop complex, 10 to 40 percent slopes

This map unit is on mountain ridges and hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 7,600 to 8,200 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 32 to 36 degrees F, and the frost-free period is less than 80 days. Frost commonly occurs during summer months.

This unit is 45 percent Hazton gravelly sandy loam and 40 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Clayburn loam and 10 percent Kezar loam on moderately steep hillsides.

The Hazton soils are shallow and well drained. They formed in residuum derived dominantly from granite. The upper 3 inches of the surface layer is typically dark grayish brown gravelly sandy loam. The lower 8 inches is grayish brown gravelly sandy loam. Hard granite is at a depth of 11 inches. In some areas the surface layer is gravelly loam.

Permeability of the Hazton soils is moderately rapid. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

Rock outcrop consists of exposures of massive, hard granite.

This unit is used mainly for summer livestock grazing and wildlife habitat.

The potential plant community on the Hazton soils is mainly bluebunch wheatgrass, Idaho fescue, Sandberg bluegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and Sandberg bluegrass increase in abundance. As the range condition further deteriorates, broom snakeweed, curlycup gumweed, and annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 600 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Hazton soils are in capability subclass VIIe, nonirrigated. Rock outcrop is in capability class VIII.

The Hazton soils are in the Shallow Igneous, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Clayburn and Kezar soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site.

199—Hiland loamy sand, 2 to 15 percent slopes

These very deep, well drained soils are on stable dunes and terraces. They formed in eolian deposits and alluvium derived from various sources. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,400 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 43 to 49 degrees F, and the frost-free period is 110 to 130 days.

The surface layer is typically pale brown loamy sand 7 inches thick. The upper 7 inches of the subsoil is light yellowish brown sandy clay loam. The next 11 inches is yellowish brown sandy clay loam. The lower 17 inches of the subsoil is very pale brown sandy loam. The substratum to a depth of 60 inches is very pale brown loamy sand.

Included in this unit are small areas of Orpha loamy sand and Vonalee loamy sand. Also included in some areas are small areas of Bowbac sandy loam. Included areas make up 20 percent of the total acreage.

Permeability of the Hiland soils is moderate. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for homesite and urban development.

The potential plant community on this unit is mainly needleandthread, prairie sandreed, Indian ricegrass, and silver sagebrush. As the range condition deteriorates, fringed sagewort and blue grama increase in abundance. As the range condition further deteriorates, broom snakeweed and cheatgrass invade. The potential plant community produces about 1,300 pounds of air-dry vegetation in normal years. Production ranges from 1,600 pounds in favorable years to 750 pounds in unfavorable years. This unit is poorly suited to livestock watering ponds because of the seepage potential.

If this unit is used for hay and pasture, the main limitation is the slope. Proper distribution of irrigation water is a concern in the more sloping areas. Sprinkler irrigation is the most suitable method. Contour ditch irrigation, although not as efficient or effective, can be used if the ditches are placed to ensure that all areas are adequately irrigated without excessive applications of water. Applications of irrigation water should be adjusted to the available water capacity and intake rate of the soils and to the crop needs.

This unit is moderately well suited to homesite and urban development. The main limitation is the slope. Excavation for houses and access roads can expose material that is highly susceptible to wind erosion. Revegetation of disturbed areas around construction sites, as soon as possible after excavation, helps to control wind erosion.

This map unit is in capability subclass IVe, nonirrigated.

The Hiland soils are in the Sandy, 10 to 14 inch ppt., Northern Plains range site. The inclusions of Orpha soils are in the Sands, 10 to 14 inch ppt., Northern Plains range site. The inclusions of Vonalee soils are in the Sandy, 10 to 14 inch ppt., Northern Plains range site.

200—Hiland loamy sand, gravelly substratum, 1 to 6 percent slopes

These very deep, well drained soils are on broad terraces. They formed in eolian deposits over alluvium. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 5,400 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 120 to 130 days.

The upper part of the surface layer is typically pale brown loamy sand 2 inches thick. The lower part is pale brown sandy loam 5 inches thick. The upper 15 inches of the subsoil is yellowish brown sandy clay loam. The next 6 inches is light yellowish brown sandy loam. The lower 5 inches of the subsoil is very pale brown loamy sand. The substratum, to a depth of 60 inches or more, is very pale brown gravelly loamy sand.

Included in this unit are small areas of Bowbac loamy sand on convex slopes and gravelly loamy sand soils on terrace breaks. Also included are small areas of Urban land. Included areas make up 10 percent of the total acreage.

Permeability of the Hiland soils is moderate. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat. It is also used for homesite development, for irrigated hay and pasture, or as a source of sand and gravel.

The potential plant community on this unit is mainly needleandthread, Indian ricegrass, prairie sandreed, threadleaf sedge, and silver sagebrush. As the range condition deteriorates, fringed sagewort and blue grama increase in abundance. As the range condition further deteriorates, broom snakeweed and cheatgrass invade. The potential plant community produces about 1,300 pounds of air-dry vegetation in normal years. Production ranges from 1,600 pounds in favorable years to 750 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the seepage potential.

If this unit is used as a source of sand and gravel, the main limitation is the content of fines. Topsoil can be stockpiled and used to reclaim areas disturbed during excavation.

If this unit is used for irrigated hay and pasture, water should be carefully applied to avoid deep percolation. Deep percolation water can move downslope, causing saline seeps. Applications of irrigation water should be adjusted to the available water capacity and water intake rate of the soils and to the crop needs. Ditch linings or pipelines should be used to convey irrigation water to avoid excessive seepage from ditches.

If this unit is used for homesite development, the main limitation is the moderate shrink-swell potential. Buildings and roads should be designed to offset the effects of the shrink-swell potential. Wind erosion is also a concern that should be addressed. Excavation for houses and access roads can expose material that is highly susceptible to wind erosion. Revegetating disturbed areas around construction sites, as soon as possible after excavation, will help to control wind erosion.

This map unit is in capability subclass IIIe, irrigated, and IVe, nonirrigated.

The Hiland soils are in the Sandy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Bowbac soils are in the Sandy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of the gravelly loamy sand soils are in the Shallow Sandy, 10 to 14 inch ppt., Northern Plains range site.

201—Hiland sandy loam, 0 to 6 percent slopes

These very deep, well drained soils are on alluvial fans. They formed in alluvium derived dominantly from sandstone. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 6,300 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

The surface layer is typically grayish brown sandy loam 2 inches thick. The upper 5 inches of the subsoil is brown sandy loam. The next 15 inches is light yellowish brown sandy clay loam. The next 5 inches is light gray sandy loam. The lower 11 inches of the subsoil is very pale brown loamy sand. The substratum, to a depth of 60 inches or more, is pale brown sandy loam.

Included in this unit are small areas of Bowbac sandy loam, Terro sandy loam, and Vonalee sandy loam on ridge crests and knobs. Also included are small areas of Forkwood loam in swales and Keyner loam intermixed with the Hiland soils. Included areas make up 20 percent of the total acreage.

Permeability of the Hiland soils is moderate. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for irrigated hay and pasture or for homesite development.

The potential plant community on this unit is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, threadleaf sedge, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the seepage potential.

If this unit is used for irrigated hay and pasture, applications of irrigation water should be adjusted to the available water capacity and water intake rate of the soils and to the crop needs. Ditch linings or pipelines should be used to convey irrigation water to avoid excessive seepage from ditches.

If this unit is used for homesite development, the main limitation is the hazard of wind erosion during construction. Excavation for houses and access roads can expose material that is highly susceptible to wind erosion. Revegetating disturbed areas around construction sites, as soon as possible after excavation, helps to control wind erosion.

This map unit is in capability subclass IIIe, irrigated, and capability subclass IVe, nonirrigated.

The Hiland soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Bowbac, Forkwood, and Keyner soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Terro and Vonalee soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

202—Inchau-Clayburn-Chittum complex, 4 to 20 percent slopes

This map unit is on mountain dip slopes and adjacent mountainsides. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 7,500 to 8,800 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 33 to 36 degrees F, and the frost-free period is less than 80 days. Frost commonly occurs during summer months.

This unit is 35 percent Inchau loam, 30 percent Clayburn loam, and 20 percent Chittum fine sandy loam. The Inchau soils are on dip slopes with 6 to 20 percent slopes, the Clayburn soils are on foot slopes of mountainsides with 4 to 15 percent slopes, and the Chittum soils are on dip slopes with 4 to 10 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Bachus loam intermixed with the Inchau soils, Decross loam in swales and saddles between ridge crests, Nielsen very stony loam on ridge crests, and Rock outcrop occurring throughout the unit. Included areas make up 15 percent of the total acreage.

The Inchau soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone. The surface layer is typically very dark grayish brown loam 4 inches thick. The upper 10 inches of the subsoil is dark grayish brown loam. The lower 7 inches of the subsoil is grayish brown clay loam. The substratum is dark yellowish brown loam 9 inches thick. Soft sandstone is at a depth of 30 inches. In some areas the surface layer is fine sandy loam.

Permeability of the Inchau soils is moderate. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Clayburn soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from quartzitic sandstone. The surface layer is typically dark grayish brown loam 4 inches thick. The upper 6 inches of the subsoil is dark grayish brown loam. The next 10 inches is dark grayish brown clay loam. The lower part of the subsoil to a depth of 30 inches is brown clay loam. The substratum to a depth of 60 or more inches is brown loam.

Permeability of the Clayburn soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Chittum soils are shallow and well drained. They formed in slopewash alluvium and residuum derived dominantly from quartzitic sandstone. The surface layer is typically very dark grayish brown fine sandy loam 4 inches thick. The upper 8 inches of the subsoil is dark brown sandy clay loam. The lower 7 inches of the subsoil is dark yellowish brown sandy clay loam. Hard sandstone is at a depth of 19 inches.

Permeability of the Chittum soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

This unit is used mainly for summer livestock grazing and wildlife habitat.

The potential plant community on the Inchau and Clayburn soils is mainly Idaho fescue, Columbia needlegrass, spike fescue, bluebunch wheatgrass, and big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, cheatgrass, gumweed, Canada thistle, and stickseed invade. The potential plant community produces about 1,350 pounds of air-dry vegetation in normal years. Production ranges from 1,600 pounds in favorable years to 1,100 pounds in unfavorable years. The Inchau soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope. The Clayburn soils are only moderately well suited to livestock watering ponds because of the slope.

The potential plant community on the Chittum soils is mainly Idaho fescue, bluebunch wheatgrass, Columbia needlegrass, spike fescue, and sagebrush. As the range condition deteriorates, sagebrush increases. As the range condition further deteriorates, cheatgrass, goldenweed, gumweed, and stickseed invade. The potential plant community produces about 850 pounds of air-dry vegetation in normal years. Production ranges from 1,000 pounds in favorable years to 500 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock.

This map unit is in capability subclass VIe, nonirrigated.

The Inchau and Clayburn soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site. The Chittum soils are in the Shallow Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site. Inclusions of Bachus, Nielsen, and Decross soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site.

203—Inchau-Farlow complex, 15 to 40 percent slopes

This map unit is on hills dissected by spring-fed draws. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,900 to 7,800 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 34 to 37 degrees F, and the frost-free period is less than 80 days. Frost commonly occurs during summer months.

This unit is 45 percent Inchau loam and 35 percent Farlow gravelly loam. The Inchau soils are on hillsides with 15 to 25 percent slopes and the Farlow soils are on hill crests and hillsides with 20 to 40 percent slopes.

Included in this unit are Clayburn loam on foot slopes; Moslander loam adjacent to streams and springs; Farlow, moist soils on hillsides; and Starley cobbly loam and Rock outcrop on hill crests. Also included in a few areas are small areas of Kezar loam. Included areas make up 20 percent of the total acreage.

The Inchau soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone. The surface layer is typically dark grayish brown loam 10 inches thick. The upper 9 inches of the subsoil is brown gravelly clay loam. The lower 7 inches of the subsoil is light yellowish brown gravelly clay loam. The substratum is brownish yellow clay loam 6 inches thick. Soft sandstone is at a depth of 32 inches.

Permeability of the Inchau soils is moderate. Available water capacity is moderate. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Farlow soils are deep and well drained. They formed in colluvium derived dominantly from sandstone and limestone. The surface layer is typically brown gravelly loam 2 inches thick. The upper part of the subsoil is brown gravelly loam 6 inches thick. The lower part of the subsoil is light brownish gray very gravelly clay loam 47 inches thick. Hard limestone bedrock is at a depth of 55 inches.

Permeability of the Farlow soils is moderate. Available water capacity is very low. The effective rooting depth is 40 to 60 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for summer livestock grazing and wildlife habitat.

The potential plant community on the Inchau soils is mainly bluebunch wheatgrass, Idaho fescue, Griffith wheatgrass, prairie junegrass, and big sagebrush. As the range condition deteriorates, blue grama, threadleaf sedge, big sagebrush, and rabbitbrush increase in abundance. As the range condition further deteriorates, broom snakeweed, pricklypear, annual grasses, and annual forbs invade. The potential plant community produces about 1,500 pounds of air-dry vegetation in normal years. Production ranges from 2,000 pounds in favorable years to 800 pounds in unfavorable years. The Inchau soils are poorly suited to livestock watering ponds because of the slope.

The potential plant community on the Farlow soils is mainly bluebunch wheatgrass, Idaho fescue, spike fescue, Columbia needlegrass, and big sagebrush. As the range condition deteriorates, big sagebrush increases. As the range condition further deteriorates, broom snakeweed, curlycup gumweed, and annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 800 pounds in unfavorable years. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. The Farlow soils are poorly suited to livestock watering ponds because of the slope.

The Inchau soils are in capability subclass VIe, nonirrigated, and the Farlow soils are in capability subclass VIIs, nonirrigated.

The Inchau soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. The Farlow soils are in the Shallow Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Clayburn and Kezar soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Moslander soils are in the Subirrigated, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Farlow, moist soils in this unit are in woodland. Inclusions of Starley soils are in the Very Shallow, 15 to 19 inch ppt., Foothills and Mountains Southeast range site.

204—Irson very gravelly loam, 20 to 45 percent slopes

These very shallow or shallow, well drained soils are on mountain crests and mountain slopes. They formed in colluvium and residuum derived dominantly from granite. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 7,000 to 7,500 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 34 to 36 degrees F, and the frost-free period is less than 90 days. Frost commonly occurs during the summer months.

The surface layer is typically dark brown very gravelly loam 6 inches thick. The underlying material is dark yellowish brown very gravelly sandy clay loam 10 inches thick. Hard granite is at a depth of 16 inches.

Included in this unit are small areas of Kezar loam on mountain slopes, Moslander loam adjacent to streams, and Rock outcrop on mountain slopes and vertical canyon walls. Included areas make up 20 percent of the total acreage.

Permeability of the Irson soils is moderate. Available water capacity is very low. The effective rooting depth is 8 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for summer livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly Columbia needlegrass, Idaho fescue, bluebunch wheatgrass, and black sagebrush. As the range condition deteriorates, sagebrush increases. As the range condition further deteriorates, Sandberg bluegrass and annual forbs invade. The potential plant community produces about 800 pounds of air-dry vegetation in normal years. Production ranges from 950 pounds in favorable years to 450 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and the depth to bedrock. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. These soils are poorly suited to livestock watering ponds because of the slope and the depth to bedrock.

This map unit is in capability subclass VIIs, nonirrigated.

The Irson soils are in the Shallow Igneous, 15 to 19 inch ppt., Foothills and Mountains East range site. The inclusions of Kezar soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site. The inclusions of Moslander soils are in the Subirrigated, 15 to 19 inch ppt., Foothills and Mountains East range site.

205—Irson-Kezar-Rock outcrop complex, 6 to 40 percent slopes

This map unit is on mountain slopes and mountain crests. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 7,000 to 8,000 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 32 to 36 degrees F, and the frost-free period is less than 90 days. Frost commonly occurs during summer months.

This unit is 40 percent Irson very channery sandy clay loam, 30 percent Kezar gravelly sandy loam, and 15 percent Rock outcrop. The Irson soils are on crests with 15 to 40 percent slopes, the Kezar soils are back slopes and foot slopes with 6 to 20 percent slopes, and Rock outcrop is on steep crests and side slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Moslander loam and 10 percent very deep very gravelly soils adjacent to drainageways.

The Irson soils are very shallow or shallow and are well drained. They formed in residuum and colluvium derived dominantly from granite. The surface layer is typically dark brown very channery sandy clay loam 10 inches thick. The underlying material is brown very channery sandy clay loam 4 inches thick. Hard granite is at a depth of 14 inches. In some areas the surface layer is very channery loam.

Permeability of the Irson soils is moderate. Available water capacity is very low. The effective rooting depth is 8 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Kezar soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from granite. The surface layer is typically dark brown gravelly sandy loam 4 inches thick. The upper 4 inches of the subsoil is brown sandy clay loam. The lower 13 inches of the subsoil is yellowish brown sandy clay loam. The substratum is brown gravelly sandy clay loam 6 inches thick. Hard granite is at a depth of 27 inches.

Permeability of the Kezar soils is moderate. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

Rock outcrop consists of exposures of hard granite.

This unit is used mainly for summer livestock grazing and wildlife habitat.

The potential plant community on the Irson soils is mainly bluebunch wheatgrass, Idaho fescue, slimstem muhly, and threetip sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and Sandberg bluegrass increase in abundance. As the range condition further deteriorates, broom snakeweed, curlycup gumweed, and annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 600 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. The Irson soils are poorly suited to livestock watering ponds because of the slope and the depth to bedrock.

The potential plant community on the Kezar soils is mainly bluebunch wheatgrass, Idaho fescue, prairie junegrass, Griffith wheatgrass, and big sagebrush. As the range condition deteriorates, blue grama, threadleaf sedge, big sagebrush, and rabbitbrush increase in abundance. As the range condition further deteriorates, broom snakeweed, pricklypear, annual grasses, and annual forbs invade. The potential plant community produces about 1,500 pounds of air-dry vegetation in normal years. Production ranges from 2,000 pounds in favorable years to 800 pounds in unfavorable years. The Kezar soils are poorly suited to livestock watering ponds because of the slope and the depth to bedrock.

The Irson soils are in capability subclass VIIs, nonirrigated. The Kezar soils are in capability subclass, VIe, nonirrigated. Rock outcrop is in capability class VIII.

The Irson soils are in the Shallow Igneous, 15 to 19 inch ppt., Foothills and Mountains Southeast range site.

The Kezar soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Moslander soils are in the Subirrigated, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of very deep very gravelly soils are in the Coarse Upland, 15 to 19 inch ppt., Foothills and Mountains Southeast range site.

206—Irson-Sebud complex, 40 to 65 percent slopes

This map unit is on mountains and canyon sides. The native vegetation is mainly grasses, forbs, shrubs, and conifers. Elevation is 6,500 to 9,000 feet. The annual precipitation is 20 to 25 inches, the annual air temperature is 33 to 36 degrees F, and the frost-free period is less than 90 days. Frost commonly occurs during summer months.

This unit is 45 percent Irson extremely cobbly sandy clay loam and 35 percent Sebud very stony loam. The Irson soils are on mountain crests and the Sebud soils are on mountain slopes and canyon sides. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are Farlow, moist soils; moderately deep very stony loam soils on mountainsides and canyon sides; and Rock outcrop on ridge crests and ledges. Also included are small areas of Moslander loam adjacent to springs and stream channels. Included areas make up 20 percent of the total acreage.

The Irson soils are very shallow or shallow and are well drained. They formed in residuum or colluvium derived dominantly from granite. The surface layer is typically dark brown extremely cobbly sandy clay loam 12 inches thick. The underlying material is yellowish brown extremely cobbly sandy clay loam 6 inches thick. Hard fractured granite is at a depth of 18 inches.

Permeability of the Irson soils is moderate. Available water capacity is very low. The effective rooting depth is 8 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Sebud soils are very deep and well drained. They formed in colluvium derived dominantly from granite. The surface is typically covered with a 3-inch-thick layer of partially decomposed pine needles and other forest litter. The surface layer is dark brown very stony loam 4 inches thick. The subsoil is dark brown very stony loam 10 inches thick. The substratum, to a depth of 60 inches or more, is yellowish brown very stony loam.

Permeability of the Sebud soils is moderate. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for wildlife habitat and summer livestock grazing. A few areas are used for homesite development.

The potential plant community on the Irson soils is mainly bluebunch wheatgrass, thickspike wheatgrass, spike fescue, Idaho fescue, black sagebrush, antelope bitterbrush, and an occasional ponderosa pine. As the range condition deteriorates, big sagebrush, balsam root, and unpalatable forbs increase in abundance. As the range condition further deteriorates, annuals and burdock invade. The potential plant community produces about 1,500 pounds of air-dry vegetation in normal years. Production ranges from 1,800 pounds in favorable years to 1,200 pounds in unfavorable years. The slope limits access by livestock and results in overgrazing of the less sloping areas.

The present vegetation on the Sebud soils is mainly ponderosa pine, limber pine, and aspen with an understory of pine grass. Production of vegetation suitable for livestock grazing is limited mainly by the canopy cover which hinders the understory growth. The slope limits access by livestock and results in overgrazing of the less sloping areas.

If the Sebud soils are used for production of ponderosa pine, the main limitations are the slope, content of stones, and the slow regrowth due to the cold climate and short growing season. The site index for ponderosa pine ranges from 45 to55. Stones on the surface can interfere with felling, yarding, and other operations involving the use of equipment. Plant competition delays natural regeneration but does not prevent the eventual development of a fully stocked, normal stand of trees. Trees are subject to windthrow because the content of stones limits the rooting depth. Conventional methods of harvesting timber are difficult to use because of the slope.

If this unit is used for homesite development, the main limitations are the large rock fragments and the slope, as well as the depth to bedrock in areas of the Irson soils. Installation of septic tank absorption lines in or on the bedrock is not recommended due to the possibility of inadequate filtration and contamination of ground water supplies. Effluent can surface downslope, creating a health hazard. The high content of large stones and the depth to hard bedrock make excavation difficult.

This map unit is in capability subclass VIIe, nonirrigated.

The Irson soils are in the Shallow Igneous, 20+ inch ppt., Mountains range site. The Sebud soils are in woodland. Inclusions of Farlow, moist and very deep very stony soils in this unit are in woodland. Inclusions of

Moslander soils are in the Subirrigated, 15 to 19 inch ppt., Foothills and Mountains Southeast range site.

207—Keeline-Taluce-Rock outcrop complex, 6 to 20 percent slopes

This map unit is on hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,400 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 50 percent Keeline fine sandy loam, 20 percent Taluce fine sandy loam, and 15 percent Rock outcrop. The Keeline soils are on hillsides and foot slopes with 6 to 20 percent slopes, the Taluce soils are on hill crests with 6 to 20 percent slopes, and Rock outcrop is on hill crests and hillsides. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Orpha loamy sand on stable dunes, Tullock loamy sand and moderately deep soils similar to Keeline on backslopes, and Blowout land intermixed with the Keeline and Orpha soils. Included areas make up 15 percent of the total acreage.

The Keeline soils are very deep and somewhat excessively drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone. The surface layer is typically brown fine sandy loam 3 inches thick. The subsoil is yellowish brown fine sandy loam 5 inches thick. The substratum, to a depth of 60 inches or more, is light yellowish brown fine sandy loam. In some areas the surface layer is loamy sand.

Permeability of the Keeline soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The Taluce soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from sandstone. The surface layer is typically brown fine sandy loam 4 inches thick. The underlying material is pale brown fine sandy loam 10 inches thick. Soft, platy sandstone is at a depth of 14 inches.

Permeability of the Taluce soils is moderately rapid. Available water capacity is very low. The effective rooting depth is 6 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

Rock outcrop consists of exposed sandstone.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Keeline soils is mainly needleandthread, thickspike wheatgrass, threadleaf sedge, Indian ricegrass, and silver sagebrush. As the range condition deteriorates, silver sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. The Keeline soils are poorly suited to livestock watering ponds because of the seepage potential and the slope.

The potential plant community of the Taluce soils is mainly bluebunch wheatgrass, Indian ricegrass, needleandthread, threadleaf sedge, mutton bluegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge increases. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the depth and the available water capacity of the soils. The Taluce soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Keeline soils are in capability subclass IVe, nonirrigated. The Taluce soils are in capability subclass VIIe, nonirrigated, and Rock outcrop is in capability class VIII.

The Keeline soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. The Taluce soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Orpha and Tullock soils are in the Sands, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of moderately deep soils similar to Keeline are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

208—Keyner sandy clay loam, 3 to 10 percent slopes

These very deep, well drained soils are on alluvial fans and fan terraces. They formed in alluvium derived dominantly from sodic sandstone and shale. The native vegetation is mainly shrubs and grasses. Elevation is 5,200 to 6,200 feet. The annual precipitation is 10 to 12 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

The surface layer is typically pale brown sandy clay loam 3 inches thick. The upper 12 inches of the subsoil is pale brown sandy clay loam. The lower 10 inches of the subsoil is very pale brown, very strongly alkaline, slightly saline sandy clay loam. The substratum, to a depth of 60 inches or more, is very pale brown, very strongly alkaline, moderately saline loam.

Included in this unit are 10 percent Cavegulch clay loam and 10 percent Petrie clay loam intermixed with the Keyner soils.

Permeability of the Keyner soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, mutton bluegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. Loss of the surface layer results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for grazing. These soils are only moderately well suited to livestock watering ponds because of the slope.

This map unit is in capability subclass IVs, nonirrigated.

The Keyner soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Petrie soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Cavegulch soils are in the Saline Upland, 10 to 14 inch ppt., High Plains Southeast range site.

209—Keyner-Absted-Slickspots complex, 0 to 6 percent slopes

This map unit is on alluvial fans and low terraces. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 50 percent Keyner sandy loam, 20 percent Absted sandy clay loam, and 15 percent Slickspots. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Arvada clay loam on alluvial fans and terraces and Cadoma clay loam on foot slopes. Also included in some areas are small areas of Orella clay loam on low knobs and Vonalee loamy sand on stable dunes. Included areas make up 15 percent of the total acreage.

The Keyner soils are very deep and well drained. They formed in sodic alluvium derived from various sources. The surface layer is typically light brownish gray sandy loam 1 inch thick. The upper 11 inches of the subsoil is grayish brown sandy clay loam. The next 7 inches is light yellowish brown, very strongly alkaline, slightly saline sandy clay loam. The lower 12 inches of the subsoil is light brownish gray, very strongly alkaline, slightly saline sandy clay loam. The substratum, to a depth of 60 inches or more, is light yellowish brown, strongly alkaline, moderately saline sandy clay loam. In some areas the surface layer is loam, sandy clay loam, or loamy sand.

Permeability of the Keyner soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

The Absted soils are very deep and well drained. They formed in alluvium derived dominantly from sodic shale. The surface layer is typically pale brown sandy clay loam 3 inches thick. The upper 11 inches of the subsoil is yellowish brown clay. The lower 8 inches of the subsoil is yellowish brown, strongly alkaline, moderately saline clay loam. The substratum, to a depth of 60 inches or more, is light yellowish brown, strongly alkaline, moderately saline clay loam. In some areas the surface layer is clay loam.

Permeability of the Absted soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more for plants that can tolerate saline and alkaline soils, but it is 10 to 20 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

Slickspots are areas of clayey soils that are very strongly alkaline and support little or no vegetation.

This unit is used mainly for livestock grazing and wildlife habitat. A few areas are used for irrigated hay and pasture.

The potential plant community on the Keyner and Absted soils is mainly western wheatgrass, bluebunch wheatgrass, needleandthread, mutton bluegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. Loss of the surface layer results in a severe decrease in productivity and in the potential of the unit to produce plants suitable for grazing. This unit is only moderately well suited to livestock watering ponds because of the slope.

If this unit is used for irrigated hay and pasture, the main limitations are the salinity and alkalinity of the soils and the presence of Slickspots. To maximize production, species of plants that tolerate saline and alkaline soils should be planted. Irrigation water should be applied at a rate that ensures optimum production without excessive deep percolation. Applications of irrigation water should be adjusted to the available water capacity and water intake rate of the soils and to the crop needs. Sprinkler irrigation is the most suitable method of applying water.

The Keyner and Absted soils are in capability subclass IVs, nonirrigated and irrigated. Slickspots are in capability class VIII.

The Keyner and Absted soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Cadoma and Orella soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Vonalee soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

210—Keyner-Hiland association, gently sloping

This map unit is on alluvial fans and terraces. The slope is 0 to 6 percent. The native vegetation is mainly grasses and shrubs. Elevation is 5,100 to 5,800 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 45 percent Keyner sandy loam and 35 percent Hiland sandy loam. The Keyner soils are on the lower areas of alluvial fans and on terraces with 0 to 4 percent slopes. The Hiland soils are on the upper areas of the alluvial fans and on terraces with 2 to 6 percent slopes.

Included in this unit are 10 percent Arvada clay loam intermixed with the Keyner soils, 5 percent Vonalee loamy sand intermixed with the Hiland soils, and 5 percent Slickspots intermixed with the Keyner soils.

The Keyner soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically brown sandy loam 4 inches thick. The upper 13 inches of the subsoil is brown sandy clay loam. The lower 7 inches of the subsoil is pale brown, very strongly alkaline, slightly saline sandy clay loam. The substratum, to a depth of 60 inches or more, is pale brown, very strongly alkaline, moderately saline sandy loam.

Permeability of the Keyner soils is slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more for plants that can tolerate saline and alkaline soils, but it is 10 to 20 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

The Hiland soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone. The surface layer is typically pale brown sandy loam 2 inches thick. The upper 12 inches of the subsoil is light brownish gray sandy clay loam. The next 8 inches is pale brown sandy loam. The lower 14 inches of the subsoil is pale brown sandy loam. The substratum, to a depth of 60 inches or more, is light brownish gray loamy sand.

Permeability of the Hiland soils is moderate. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the unit is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. Loss of the surface layer of the Keyner soils results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for grazing. The Keyner soils are well suited to livestock watering ponds. The Hiland soils are poorly suited to livestock watering ponds because of the seepage potential.

The Keyner soils are in capability subclass IVs, nonirrigated. The Hiland soils are in capability subclass IVe, nonirrigated.

The Keyner and Hiland soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Arvada soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Vonalee soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

211—Kezar-Irson-Clayburn association, hilly

This map unit is on mountain slopes. The slope is 5 to 35 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 7,200 to 8,900 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 32 to 36 degrees F, and the frost-free period is less than 80 days. Frost commonly occurs during the summer months.

This unit is 30 percent Kezar loam, 25 percent Irson very gravelly sandy clay loam, and 25 percent Clayburn sandy loam. The Kezar soils are on hillsides with 5 to 35 percent slopes, the Irson soils are on hill crests with 5 to 35 percent slopes, and the Clayburn soils are on foot slopes with 5 to 15 percent slopes.

Included in this unit are 5 percent Moslander loam in drainageways, 5 percent very deep stony loam soils adjacent to drainageways, and 10 percent Rock outcrop on ridge crests.

The Kezar soils are moderately deep and well drained.

They formed in slopewash alluvium and residuum derived dominantly from granite. The surface layer is typically very dark grayish brown loam 3 inches thick. The upper part of the subsoil is dark grayish brown gravelly sandy clay loam 7 inches thick. The lower 5 inches of the subsoil is grayish brown gravelly sandy clay loam. The substratum is grayish brown gravelly sandy clay loam 9 inches thick. Hard granite is at a depth of 24 inches.

Permeability of the Kezar soils is moderate. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Irson soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from granite. The surface layer is typically dark brown very gravelly sandy clay loam 7 inches thick. The underlying material is dark yellowish brown very cobbly sandy clay loam 4 inches thick. Hard granite is at a depth of 11 inches.

Permeability of the Irson soils is moderate. Available water capacity is very low. The effective rooting depth is 8 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Clayburn soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from granite. The surface layer is typically very dark grayish brown sandy loam 5 inches thick. The subsoil is very dark grayish brown sandy clay loam 29 inches thick. The substratum, to a depth of 60 inches or more, is yellowish brown gravelly sandy clay loam.

Permeability of the Clayburn soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for summer livestock grazing and wildlife habitat.

The potential plant community on the Kezar and Clayburn soils is mainly Columbia needlegrass, spike fescue, Idaho fescue, bluebunch wheatgrass, and big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, cheatgrass, gumweed, Canada thistle, and stickseed invade. The potential plant community produces about 1,350 pounds of air-dry vegetation in normal years. Production ranges from 1,600 pounds in favorable years to 1,100 pounds in unfavorable years. The Kezar soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope. The Clayburn soils are only moderately well suited to livestock watering ponds because of the seepage potential and the slope.

The potential plant community on the Irson soils is mainly Columbia needlegrass, Idaho fescue, bluebunch wheatgrass, western wheatgrass, and black sagebrush. As the range condition deteriorates, sagebrush increases. As the range condition further deteriorates, Sandberg bluegrass and annual forbs invade. The potential plant community produces about 800 pounds of air-dry vegetation in normal years. Production ranges from 950 pounds in favorable years to 450 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. Loss of the surface layer results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for grazing. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Kezar soils are in capability subclass VIe, nonirrigated. The Irson soils are in capability subclass VIIs, nonirrigated. The Clayburn soils are in capability subclass VIe, nonirrigated.

The Kezar and Clayburn soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site. The Irson soils are in the Shallow Igneous, 15 to 19 inch ppt., Foothills and Mountains East range site. Inclusions of Moslander soils are in the Subirrigated, 15 to 19 inch ppt., Foothills and Mountains East range site. Inclusions of very deep stony loam soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site.

212—Lander loam, 0 to 3 percent slopes

These very deep, somewhat poorly drained soils are on flood plains. They formed in alluvium derived from various sources. The native vegetation is mainly grasses. Elevation is 5,400 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 41 to 45 degrees F, and the frost-free period is 100 to 110 days.

The surface layer is typically dark brown loam 12 inches thick. The upper 6 inches of the underlying material is brown sandy clay loam. The next 18 inches is yellowish brown sandy clay loam with common yellowish red mottles. The lower part, to a depth of 60 inches or more, is yellowish brown gravelly sandy clay loam with common yellowish red mottles.

Included in this unit are somewhat poorly drained very stony loam soils and poorly drained loam soils adjacent to streams. Included areas make up 20 percent of the total acreage.

Permeability of the Lander soils is moderate. Available water capacity is high. The effective rooting depth is limited by the seasonal high water table, which fluctuates between depths of 1.5 and 3.5 feet from April through June. These soils are subject to frequent brief periods of flooding from April through June. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for hay and pasture, livestock grazing, and for wildlife habitat.

The potential plant community on this unit is mainly basin wildrye, western wheatgrass and tufted hairgrass. As the range condition deteriorates, sedges, shrubby cinquefoil, rubber rabbitbrush, and willows increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 3,700 pounds of air-dry vegetation in normal years. Production ranges from 4,300 pounds in favorable years to 3,000 pounds in unfavorable years. The present vegetation in most areas is mainly smooth brome and western wheatgrass.

If this unit is used for hay and pasture, the main limitation is seasonal wetness. In some areas the use of equipment may be limited during the spring. Proper stocking rates, pasture rotation, and restricted grazing during wet periods help to keep the pasture in good condition.

This map unit is in capability subclass IVw, nonirrigated and irrigated.

The Lander soils are in the Subirrigated, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of very stony loam soils are in the Subirrigated, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of poorly drained loam soils are in the Wetland, 10 to 14 inch ppt., High Plains Southeast range site.

213—Leavitt-Coutis complex, 5 to 40 percent slopes

This map unit is on mountain slopes and adjacent alluvial fans. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 7,000 to 8,000 feet. The annual precipitation is 15 to 17 inches, the annual air temperature is 33 to 37 degrees F, and the frost-free period is less than 90 days. Frost commonly occurs during summer months.

This unit is 60 percent Leavitt loam and 20 percent Coutis fine sandy loam. The Leavitt soils are on back slopes, foot slopes, and alluvial fans with 5 to 40 percent slopes The Coutis soils are on foot slopes and alluvial fans with 5 to 20 percent slopes.

Included in this unit are small areas of Chittum loam and Irson very channery sandy clay loam on ridge crests, Clayburn loam on foot slopes and alluvial fans, Foxton Variant loam on wooded mountain slopes, Farlow gravelly loam on mountain slopes, and Rock outcrop on ridges and escarpments. Included areas make up 20 percent of the total acreage.

The Leavitt soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from tuffaceous mudstone. The surface layer is typically very dark grayish brown loam 3 inches thick. The upper 7 inches of the subsoil is dark brown clay loam. The next 8 inches is dark yellowish brown clay loam. The next part, to a depth of 38 inches, is pale brown clay loam. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown loam. In some areas the surface layer is sandy loam.

Permeability of the Leavitt soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Coutis soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from tuffaceous sandstone. The surface layer is typically dark brown fine sandy loam 29 inches thick. The upper 15 inches of the underlying material is brown sandy loam. The lower part, to a depth of 60 inches or more, is pale brown sandy loam. In some areas the surface layer is sandy loam.

Permeability of the Coutis soils is moderately rapid. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is severe. The hazard of wind erosion is severe.

This unit is used mainly for summer livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly bluebunch wheatgrass, Idaho fescue, Griffth wheatgrass, prairie junegrass, spike fescue, and big sagebrush. As the range condition deteriorates, blue grama, threadleaf sedge, big sagebrush, and rabbitbrush increase in abundance. As the range condition further deteriorates, broom snakeweed, pricklypear, annual grasses, and annual forbs invade. The potential plant community produces about 1,500 pounds of air-dry vegetation in normal years. Production ranges from 2,000 pounds in favorable years to 800 pounds in unfavorable years. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. This unit is poorly suited to livestock watering ponds because of the slope.

This unit is in capability subclass VIe, nonirrigated.

The Leavitt and Coutis soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Chittum soils are in the Very Shallow, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Clayburn soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Irson soils are in the Shallow Igneous, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Foxton Variant soils are in woodland. Inclusions of Farlow soils are in the Shallow Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site.

214—Lolite-Rock outcrop complex, 10 to 40 percent slopes

This map unit is on ridges and hills. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 60 percent Lolite clay and 20 percent Rock outcrop. The Lolite soils are on crests and side slopes with 10 to 40 percent slopes. The Rock outcrop is on crests and escarpments.

Included in this unit are 5 percent Arvada clay loam on alluvial fans, 5 percent Cadoma clay loam on foot slopes, and 10 percent Samday clay loam intermixed with the Lolite soils.

The Lolite soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from sodic shale. The surface layer is typically light brownish gray clay 2 inches thick. The subsoil is light brownish gray clay 4 inches thick and contains visible gypsum accumulations. The substratum is gray moderately saline clay 4 inches thick. Soft, sodic shale is at a depth of 10 inches.

Permeability of the Lolite soils is slow. Available water capacity is very low. The effective rooting depth is 6 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

Rock outcrop consists of exposures of sodic shale.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Lolite soils is mainly western wheatgrass, Indian ricegrass, inland saltgrass, bottlebrush squirreltail, birdfoot sagebrush, and gardner saltbush. As the range condition deteriorates, gardner saltbush and Sandberg bluegrass increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 300 pounds of air-dry vegetation in normal years. Production ranges from 400 pounds in favorable years to 200 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity, available water capacity, and depth of the soils. The slope, over 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. Loss of the surface layer results in a severe decrease in productivity and in the potential of the unit to produce plants suitable for grazing.

The Lolite soils are in capability subclass VIIe, nonirrigated. Rock outcrop is in capability class VIII.

The Lolite soils are in the Shale, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Cadoma and Arvada soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Samday soils are in the Shale, 10 to 14 inch ppt., High Plains Southeast range site.

215—Lolite, dry-Rock outcrop complex, 5 to 50 percent slopes

This map unit is on ridges and hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,500 to 6,500 feet. The annual precipitation is 7 to 9 inches, the annual air temperature is 44 to 48 degrees F, and the frost-free period is 110 to 130 days.

This unit is 50 percent Lolite clay and 30 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Persayo clay loam on ridge crests and 15 percent moderately deep clayey soils in swales and on foot slopes.

The Lolite soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from sodic shale. The surface layer is typically grayish brown clay 2 inches thick. The upper 10 inches of the substratum is light olive gray sodic clay. The lower 3 inches is grayish brown moderately saline clay. Soft platy shale is at a depth of 15 inches. In some areas the surface layer is silty clay or clay loam.

Permeability of the Lolite soils is slow. Available water capacity is very low. The effective rooting depth is 6 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

Rock outcrop consists of exposures of sodic shale.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Lolite soils is mainly bluebunch wheatgrass, gardner saltbush, bottlebrush squirreltail, western wheatgrass, and Indian ricegrass. As the range condition deteriorates, birdfoot sagebrush and woodyaster increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 100 pounds of air-dry vegetation in normal years. Production ranges from 200 pounds in favorable years to 50 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the low annual precipitation, alkalinity, salinity, available water capacity, and depth of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. Loss of the surface layer results in a severe decrease in productivity and in the potential of the unit to produce plants suitable for grazing.

The Lolite soils are in capability subclass VIIe, nonirrigated. Rock outcrop is in capability class VIII.

The Lolite soils are in the Shale, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Persayo soils are in the Shallow Loamy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of moderately deep clayey soils are in the Saline Upland, 5 to 9 inch ppt., Wind River Basin range site.

216—Lonebear clay loam, 3 to 12 percent slopes

These very deep, well drained soils are on hillsides. They formed in slopewash alluvium and residuum derived dominantly from gypsiferous shale. The native vegetation is mainly grasses. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

The surface layer is typically grayish brown clay loam 1 inch thick. The upper 11 inches of the subsoil is grayish brown clay. The lower 14 inches of the subsoil is grayish brown, gypsiferous clay. The substratum a depth of 60 inches or more is grayish brown, gypsiferous clay.

Included in this unit are 5 percent Brokenhorn clay loam intermixed with the Lonebear soils, 5 percent Petrie clay loam on alluvial fans, 5 percent Samday clay loam on hill crests, and 5 percent very deep loamy soils on hillsides below sandstone uplifts.

Permeability of the Lonebear soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly green needlegrass, western wheatgrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, pricklypear invades. The potential plant community produces about 1,300 pounds of air-dry vegetation in normal years. Production ranges from 1,800 pounds in favorable years to 750 pounds in unfavorable years. These soils are only moderately well suited to livestock watering ponds because of the slope.

This map unit is in capability subclass IVe, nonirrigated.

The Lonebear soils are in the Clayey, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Brokenhorn soils are in the Clayey, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Petrie soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Samday soils are in the Shallow Clayey, 10 to 14 inch ppt., Northern Plains range site. Inclusions of very deep loam soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site.

217—Lupinto-Alcova complex, 3 to 30 percent slopes

This map unit is on dissected terraces. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,800 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

This unit is 50 percent Lupinto gravelly loam and 30 percent Alcova fine sandy loam. The Lupinto soils are on convex slopes and terrace breaks with 10 to 30 percent slopes, and the Alcova soils are in swales with 3 to 10 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Brownsto gravelly loam, 5 percent Cragosen gravelly loam on terrace breaks, and 5 percent very deep gravelly sand soils in drainageways.

The Lupinto soils are deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically yellowish brown gravelly loam 2 inches thick. The upper part of the subsoil is brown gravelly clay loam 3 inches thick. The next 7 inches is light yellowish brown very gravelly sandy clay loam. The lower 36 inches of the subsoil is brownish yellow very gravelly sandy clay loam. Soft siltstone bedrock is at a depth of 48 inches. In some areas 35 to 50 percent of the surface is covered by gravel and cobbles.

Permeability of the Lupinto soils is moderate. Available water capacity is low. The effective rooting depth is 40 to 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Alcova soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically brown fine sandy loam 4 inches thick. The upper 7 inches of the subsoil is yellowish brown sandy clay loam. The next 5 inches is light yellowish brown sandy clay loam. The lower 14 inches of the subsoil is pale brown gravelly sandy loam. The substratum, to a depth of 60 inches or more, is brownish yellow very gravelly coarse sand. In some areas the surface layer is loam.

Permeability of the Alcova soils is moderate in the subsoil and rapid in the substratum. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Lupinto soils is mainly bluebunch wheatgrass, western wheatgrass, needleandthread, mutton bluegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils. These soils are poorly suited to livestock watering ponds because of the slope.

The potential plant community on the Alcova soils is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, mutton bluegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the seepage potential.

The Lupinto soils are in capability subclass VIe, nonirrigated. The Alcova soils are in capability subclass IVe, nonirrigated.

The Lupinto soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Alcova soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Brownsto and Cragosen soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of very deep gravelly sand soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

218—Lupinto Family, steep

These very deep, well drained soils are on hillsides and ridges. They formed in colluvium and residuum derived from various sources. The slope is 20 to 45 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,200 to 7,600 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 37 to 43 degrees F, and the frost-free period is 80 to 110 days.

The properties of these soils vary considerably within an area, as well as from area to area. The surface layer is gravelly, cobbly, very gravelly, or very cobbly and has a texture of loam, sandy loam, or sandy clay loam. It is 2 to 5 inches thick. The upper part of the subsoil is gravelly, cobbly, very gravelly, or very cobbly and has a texture of sandy loam, loam, sandy clay loam, or clay loam. It is 3 to 10 inches thick. The lower part of the subsoil is very gravelly, very cobbly, extremely gravelly, or extremely cobbly and has a texture of sandy loam, loam, or sandy clay loam. It is 10 to 20 inches thick. The substratum, to a depth of 60 inches or more, is very gravelly, very cobbly, extremely gravelly, or extremely cobbly and has a texture of sand, loamy sand, sandy loam, loam, or sandy clay loam.

Included in this unit are 10 percent Adel loam in swales which receive additional snowpack, 5 percent Cragosen gravelly loam on ridge crests, and 5 percent Rock outcrop on ridges.

Permeability of the Lupinto Family soils is moderate to moderately rapid. Available water capacity is very low. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly bluebunch wheatgrass, western wheatgrass, mutton bluegrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils. The slope, over 30 percent, limits access by livestock and results in overgrazing of the less sloping areas.

This map unit is in capability subclass VIe, nonirrigated.

The Lupinto Family soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Adel soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Cragosen soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

219—McFadden-Edlin-Blackhall complex, 5 to 40 percent slopes

This map unit is on hills and terrace breaks dissected by numerous draws. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,800 to 7,000 feet. The annual precipitation is 10 to 14 inches, the

annual air temperature is 40 to 43 degrees F, and the frost-free period is 100 to 110 days.

This unit is 45 percent McFadden fine sandy loam, 25 percent Edlin sandy loam, and 15 percent Blackhall sandy loam. The McFadden soils are on back slopes and foot slopes with 5 to 40 percent slopes, the Edlin soils are on foot slopes with 5 to 25 percent slopes, and the Blackhall soils are on hill crests and back slopes with 5 to 40 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Rock River sandy loam in swales which receive additional snow pack, Zeomont loamy sand on stable dunes, moderately deep fine sandy loam soils on hillsides, and Rock outcrop on hill crests. Included areas make up 15 percent of the total acreage.

The McFadden soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from sandstone. The surface layer is typically brown fine sandy loam 4 inches thick. The upper 14 inches of the subsoil is brown fine sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is pale brown fine sandy loam. In some areas the surface layer is sandy loam.

Permeability of the McFadden soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The Edlin soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from sandstone. The surface layer is typically pale brown sandy loam 2 inches thick. The upper part of the subsoil is yellowish brown sandy loam 9 inches thick. The lower part of the subsoil, to a depth of 60 inches or more, is light yellowish brown sandy loam. In some areas the surface layer is fine sandy loam.

Permeability of the Edlin soils is moderately rapid. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The Blackhall soils are shallow and somewhat excessively drained. They formed in residuum derived dominantly from sandstone. The surface layer is typically pale brown sandy loam 2 inches thick. The underlying material is very pale brown sandy loam 12 inches thick. Soft sandstone is at a depth of 14 inches. In some areas the surface layer is loamy fine sand.

Permeability of the Blackhall soils is moderately rapid. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the McFadden soils is mainly bluebunch wheatgrass, needleandthread, Indian ricegrass, threadleaf sedge, and black sagebrush. As the range condition deteriorates, threadleaf sedge increases. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. The McFadden soils are poorly suited to livestock watering ponds because of the seepage potential and the slope.

The potential plant community on the Edlin soils is mainly needleandthread, thickspike wheatgrass, Indian ricegrass, threadleaf sedge, and silver sagebrush. As the range condition deteriorates, silver sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. The Edlin soils are poorly suited to livestock watering ponds because of the seepage potential and the slope.

The potential plant community on the Blackhall soils is mainly needleandthread, bluebunch wheatgrass, threadleaf sedge, mutton bluegrass, Indian ricegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge increases. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. The Blackhall soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The McFadden and Edlin soils are in capability subclass VIe, nonirrigated. The Blackhall soils are in capability subclass VIIe, nonirrigated.

The McFadden and Blackhall soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. The Edlin soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Rock River soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Zeomont soils are in the Sands, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of moderately deep fine sandy loam soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

220—Middlewood-Kather clay loams, 6 to 30 percent slopes

This map unit is on dip slopes. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,600 to 7,100 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 39 to 43 degrees F, and the frost-free period is 100 to 110 days.

This unit is 50 percent Middlewood clay loam and 25 percent Kather clay loam. The Middlewood soils are on slopes of 6 to 30 percent and the Kather soils are on slopes of 6 to 15 percent. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Delplain very channery clay loam on ridge crests, 5 percent very deep channery clay soils in drainageways and on alluvial fans near the lower portions of dip slopes, and 10 percent Rock outcrop on ridge crests. Also included are a few small areas of a soil that is similar to the Kather soils, but which is moderately deep to hard shale.

The Middlewood soils are shallow and well drained. They formed in slopewash alluvium and residuum derived from shale. The surface layer is typically brown clay loam 5 inches thick. The subsoil is brown clay 13 inches thick. Hard shale is at a depth of 18 inches.

Permeability of the Middlewood soils is moderately slow. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Kather soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived from shale. The surface layer is typically pale brown clay loam 3 inches thick. The upper 7 inches of the subsoil is brown clay. The next 6 inches is grayish brown clay. The lower 8 inches of the subsoil is light brownish gray clay. Soft platy shale is at a depth of 24 inches.

Permeability of the Kather soils is slow. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat. A few areas are used for bentonite mines.

The potential plant community on the Middlewood soils is mainly western wheatgrass, bluebunch wheatgrass, bottlebrush squirreltail, mutton bluegrass, winterfat, and big sagebrush. As the range condition deteriorates, prairie junegrass, Sandberg bluegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 800 pounds of air-dry vegetation in normal years. Production ranges from 1,000 pounds in favorable years to 500 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and the depth of the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The potential plant community on the Kather soils is mainly thickspike wheatgrass, green needlegrass, bluebunch wheatgrass, and birdfoot sagebrush. As the range condition deteriorates, forbs and birdfoot sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,000 pounds of air-dry vegetation in normal years. Production ranges from 1,300 pounds in favorable years to 500 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

If this unit is used for bentonite mines, the main limitation for reclamation is the thin layer of topsoil of the Middlewood soils.

The Middlewood soils are in capability subclass VIIe, nonirrigated. The Kather soils are in capability subclass VIe, nonirrigated.

The Middlewood soils are in the Shallow Clayey, 10 to 14 inch ppt., High Plains Southeast range site. The Kather soils are in the Clayey, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Delplain soils are in the Shallow Clayey, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of very deep channery clay soils are in the Clayey, 10 to 14 inch ppt., High Plains Southeast range site.

221-Milren-Bosler-Rock River sandy loams, 1 to 12 percent slopes

This map unit is on dissected terraces. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,800 to 7,400 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 38 to 41 degrees F, and the frost-free period is 90 to 100 days.

This unit is 45 percent Milren sandy loam, 20 percent Bosler sandy loam, and 15 percent Rock River sandy loam. The Milren and Bosler soils are on terraces with 1 to 8 percent slopes and the Rock River soils are on foot slopes and toe slopes of terrace breaks with 1 to 12 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Alcova sandy loam intermixed with the Bosler soils, Blackhall fine sandy loam and Cragosen gravelly loam on steep terrace breaks, Cushool sandy loam on terrace breaks and knolls, and very gravelly clayey soils intermixed with the Milren soils. Included areas make up 20 percent of the total acreage.

The Milren soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically brown sandy loam 3 inches thick. The upper 11 inches of the subsoil is yellowish brown sandy clay. The next 5 inches is pale brown sandy clay loam. The lower 8 inches of the subsoil is very pale brown loam. The substratum, to a depth of 60 inches or more, is very pale brown fine sandy loam. In some areas the surface layer is loam.

Permeability of the Milren soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Bosler soils are very deep and well drained. They formed in alluvium derived from various sources. 15 percent of the surface is typically covered with gravel. The surface layer is brown sandy loam 2 inches thick. The upper part of the subsoil is yellowish brown sandy clay loam 20 inches thick. The lower part of the subsoil, to a depth of 60 inches or more, is light gray very gravelly sand.

Permeability of the Bosler soils is moderate in the upper part of the subsoil and rapid in the lower part of the subsoil. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

The Rock River soils are very deep and well drained. It formed in alluvium derived from various sources. The surface layer is typically brown sandy loam 3 inches thick. The upper part of the subsoil is yellowish brown sandy clay loam 19 inches thick. The lower part of the subsoil, to a depth of 60 inches or more, is pale brown sandy loam. In a few areas the substratum is sandy clay loam.

Permeability of the Rock River soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Milren soils is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, green needlegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. The Milren soils are only moderately well suited to livestock watering ponds because of the seepage potential.

The potential plant community on the Bosler and Rock River soils is mainly needleandthread, thickspike wheatgrass, threadleaf sedge, Indian ricegrass, and silver sagebrush. As the range condition deteriorates, silver sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. The Bosler and Rock River soils are poorly suited to livestock watering ponds because of the seepage potential.

This unit is in capability subclass IVe, nonirrigated.

The Milren soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Bosler and Rock River soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Alcova and Cushool soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Blackhall soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Cragosen soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of very gravelly clayey soils are in the Shallow Clayey, 10 to 14 inch ppt., High Plains Southeast range site.

222—Mudray-Bributte-Birdsley complex, 6 to 30 percent slopes

This map unit is on ridges and hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,600 to 6,100 feet. The annual precipitation is 7 to 9 inches, the annual air temperature is 44 to 47 degrees F, and the frost-free period is 110 to 120 days.

This unit is 35 percent Mudray silty clay loam, 25 percent Bributte silty clay loam, and 20 percent Birdsley loam. The Mudray soils are on slopes of 6 to 15 percent and the Bributte and Birdsley soils are on slopes of 10 to 30 percent. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent moderately deep, very strongly alkaline soils on foot slopes; and 10 percent Rock outcrop on ridge crests.

The Mudray soils are shallow and well drained. They formed in residuum and slopewash alluvium derived dominantly from sodic shale. The surface layer is typically very pale brown silty clay loam 2 inches thick. The upper 4 inches of the subsoil is yellowish brown, very strongly alkaline, moderately saline clay. The next 6 inches is pale brown, very strongly alkaline, moderately saline silty clay. The lower part of the subsoil is light brownish gray, very strongly alkaline, moderately saline silty clay loam 6 inches thick. Soft, sodic shale is at a depth of 18 inches. In some areas the surface layer is silty clay or clay.

Permeability of the Mudray soils is very slow. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Bributte soils are shallow and well drained. They formed in residuum and slopewash alluvium derived dominantly from sodic shale. The surface layer is typically light brownish gray, very strongly alkaline silty clay loam 1 inch thick. The upper 7 inches of the underlying material is light yellowish brown, very strongly alkaline, moderately saline silty clay. The lower 9 inches is brownish gray, very strongly alkaline, moderately saline silty clay. Soft, sodic shale is at a depth of 17 inches.

Permeability of the Bributte soils is very slow. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Birdsley soils are shallow and well drained. They formed in residuum derived dominantly from sodic shale. The surface layer is typically light gray, very strongly alkaline loam 1 inch thick. The upper 2 inches of the underlying material is light brownish gray, very strongly alkaline, moderately saline clay loam. The lower 15 inches is light brownish gray, very strongly alkaline, moderately saline loam. Soft sodic shale is at a depth of 18 inches. In some areas the surface layer is clay loam.

Permeability of the Birdsley soils is very slow. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly bottlebrush squirreltail, Indian ricegrass, western wheatgrass, and gardner saltbush. As the range condition deteriorates, birdfoot sagebrush increases. As the range condition further deteriorates, halogeton and annual forbs invade. The potential plant community produces about 300 pounds of air-dry vegetation in normal years. Production ranges from 400 pounds in favorable years to 200 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the alkalinity, depth, and available water capacity of the soils. Loss of the surface layer results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for grazing. This unit is poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Mudray soils are in capability subclass VIIs, nonirrigated. The Bributte and Birdsley soils are in capability subclass VIIe, nonirrigated.

This unit is in the Saline Upland, 5 to 9 inch ppt., Wind River Basin range site.

223—Nathrop-Starley complex, 8 to 35 percent slopes

This map unit is on hills. The native vegetation is grasses, forbs, and shrubs. Elevation is 7,800 to 8,600 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 33 to 35 degrees F, and the frost-free period is less than 80 days. Frost commonly occurs during summer months.

This unit is 60 percent Nathrop very stony loam and 25 percent Starley cobbly loam. The Nathrop soils are on hillsides with 8 to 25 percent slopes, and the Starley soils are on hillsides and hill crests with 8 to 35 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Woosley loam on foot slopes; 5 percent very deep reddish brown loam soils on hillsides; and 5 percent Rock outcrop on hill crests, ledges, and escarpments.

The Nathrop soils are moderately deep and well drained. They formed in colluvium and residuum derived from limestone and sandstone. The surface layer is typically dark brown very stony loam 4 inches thick. The upper 8 inches of the subsoil is dark brown very stony clay loam. The next 6 inches is brown extremely stony clay loam. The lower part of the subsoil is pale brown extremely stony loam 14 inches thick. Hard fractured sandstone is at a depth of 32 inches.

Permeability of the Nathrop soils is moderate. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Starley soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from limestone. 30 percent of the surface is typically covered with gravel, cobbles, or stones. The upper part of the surface layer is dark grayish brown cobbly loam 4 inches thick. The lower part is brown very cobbly loam 3 inches thick. The substratum is pale brown very cobbly loam 6 inches thick. Hard limestone is at a depth of 13 inches.

Permeability of the Starley soils is moderate. Available water capacity is very low. The effective rooting depth is 7 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for summer livestock grazing and wildlife habitat.

The potential plant community on the Nathrop soils is mainly Columbia needlegrass, spike fescue, Idaho fescue, western wheatgrass, big sagebrush, and bluebunch wheatgrass. As the range condition deteriorates, sagebrush increases. As the range condition further deteriorates, cheatgrass, goldenweed, gumweed, and stickseed invade. The potential plant community produces about 850 pounds of air-dry vegetation in normal years. Production ranges from 1,000 pounds in favorable years to 500 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils. The Nathrop soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The potential plant community on the Starley soils is mainly Idaho fescue, bluebunch wheatgrass, and Columbia needlegrass. As the range condition deteriorates, sagebrush increases. As the range condition further deteriorates, annual forbs, cheatgrass, poverty weed, gumweed, burdock, and stickseed invade. The potential plant community produces about 600 pounds of air-dry vegetation in normal years. Production ranges from 800 pounds in favorable years to 400 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. The Starley soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

This map unit is in capability subclass VIIs, nonirrigated.

The Nathrop soils are in the Shallow Loamy, 15 to 19 inch ppt., Foothills and Mountain East range site. The Starley soils are in the Very Shallow, 15 to 19 inch ppt., Foothills and Mountain East range site. Inclusions of Woosley and very deep reddish brown loamy soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site.

224—Neldore-Moyerson-Rock outcrop complex, 10 to 30 percent slopes

This map unit is on ridges and hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,400 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 100 to 110 days.

This unit is 35 percent Neldore clay, 30 percent Moyerson clay loam, and 20 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Blazon loam, Delplain very channery clay, and Rencot very channery loam on ridge crests. Also included are very deep channery loam and very deep channery clay loam soils on foot slopes and fans. Included areas make up 15 percent of the total acreage.

The Neldore soils are shallow and well drained. They formed in residuum and slopewash alluvium derived dominantly from shale. The surface layer is typically grayish brown clay 2 inches thick. The underlying material is light brownish gray clay 14 inches thick. Soft shale is at a depth of 16 inches. In some areas the surface layer is channery clay loam or channery clay.

Permeability of the Neldore soils is slow. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Moyerson soils are shallow and well drained. They formed in residuum and slopewash alluvium derived dominantly from shale. The surface layer is typically brown clay loam 2 inches thick. The underlying material is grayish brown clay loam 11 inches thick. Soft shale is at a depth of 13 inches. In some areas the surface layer is silty clay.

Permeability of the Moyerson soils is slow. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

Rock outcrop consists of exposures of soft shale.

This unit is used mainly for livestock grazing and wildlife habitat. A few areas are used for bentonite mines.

The potential plant community on the Neldore and Moyerson soils is mainly western wheatgrass, bluebunch wheatgrass, bottlebrush squirreltail, mutton bluegrass, and big sagebrush. As the range condition deteriorates, prairie junegrass, Sandberg bluegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 800 pounds of air-dry vegetation in normal years. Production ranges from 1,000 pounds in favorable years to 500 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. This unit is poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

If this unit is used for bentonite mines, the main limitation for reclamation is the thin layer of topsoil.

The Neldore and Moyerson soils are in capability subclass VIIe, nonirrigated. The Rock outcrop is in capability class VIII.

The Neldore and Moyerson soils are in the Shallow Clayey, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Blazon soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Delplain soils are in the Shallow Clayey, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Rencot soils are in the Very Shallow, 10 to 14 inch ppt., High Plain Southeast range site. Inclusions of very deep channery soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

225—Nunnston loam, 2 to 15 percent slopes

These very deep, well drained soils are on alluvial fans and plateaus and in draws. They formed in alluvium derived from various sources. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,800 to 7,600 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 80 to 100 days.

The surface layer is typically very dark grayish brown loam 9 inches thick. The upper 4 inches of the subsoil is brown clay loam. The next 14 inches is yellowish brown clay. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown clay loam. In some areas the surface layer is clay loam.

Included in this unit are 5 percent Typic Fluvaquents in draws, 5 percent very stony and very cobbly soils on ridge crests, and 5 percent soils similar to the Nunnston soils but with a lower part of the subsoil that is gravelly or cobbly.

Permeability of the Nunnston soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for summer livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly bluebunch wheatgrass, Idaho fescue, prairie junegrass, Griffith wheatgrass, and threetip sagebrush. As the range condition deteriorates, blue grama, threadleaf sedge, threetip sagebrush, and rabbitbrush increase in abundance. As the range condition further deteriorates, broom snakeweed, pricklypear, annual grasses, and annual forbs invade. The potential plant community produces about 1,500 pounds of air-dry vegetation in normal years. Production ranges from 2,000 pounds in favorable years to 800 pounds in unfavorable years. These soils are only moderately well suited to livestock watering ponds because of the slope.

This map unit is in capability subclass IVe, nonirrigated.

The Nunnston soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Typic Fluvaquents are in the Subirrigated, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of very stony and very cobbly soils are in the Shallow Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site.

226—Oceanet-Persayo complex, 6 to 30 percent slopes

This map unit is on ridges and terrace breaks. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,600 to 6,200 feet. The annual precipitation is 7 to 9 inches, the annual air temperature is 44 to 47 degrees F, and the frost-free period is 110 to 120 days.

This unit is 40 percent Oceanet sandy loam and 40 percent Persayo loam. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are Bributte silty clay loam on ridgesides and terrace breaks, Greybull loam on ridgesides and in swales, very deep gravelly soils on foot slopes and in drainageways, moderately deep sandy loam soils on foot slopes, and Rock outcrop on ridge crests. Included areas make up 20 percent of the total acreage.

The Oceanet soils are shallow and well drained. They formed in residuum derived dominantly from sandstone. 10 percent of the surface is typically covered with gravel. The surface layer is light yellowish brown sandy loam 2 inches thick. The upper 6 inches of the underlying material is yellowish brown sandy loam. The lower 6 inches is light olive brown sandy loam. Soft sandstone is at a depth of 14 inches.

Permeability of the Oceanet soils is moderately rapid. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The Persayo soils are shallow and well drained. They formed in residuum derived dominantly from sandy shale.

10 percent of the surface is typically covered with gravel. The surface layer is light yellowish brown loam 1 inch thick. The upper part of the underlying material is yellowish brown, strongly alkaline sandy clay loam 3 inches thick. The lower part is brown, strongly alkaline sandy clay loam 12 inches thick. Soft sandy shale is at a depth of 16 inches.

Permeability of the Persayo soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Oceanet soils is mainly needleandthread, thickspike wheatgrass, western wheatgrass, threadleaf sedge, bluebunch wheatgrass, and Indian ricegrass. As the range condition deteriorates, threadleaf sedge, unpalatable forbs, and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 250 pounds of air-dry vegetation in normal years. Production ranges from 350 pounds in favorable years to 125 pounds in unfavorable years.

The potential plant community on the Persayo soils is mainly bluebunch wheatgrass, western wheatgrass, Indian ricegrass, and big sagebrush. As the range condition deteriorates, blue grama and unpalatable forbs increase in abundance. As the range condition further deteriorates, annuals and pricklypear invade. The potential plant community produces about 250 pounds of air-dry vegetation in normal years. Production ranges from 350 pounds in favorable years to 125 pounds in unfavorable years.

The production of vegetation suitable for livestock grazing on this unit is limited by the low annual precipitation and by the available water capacity and depth of the soils. This unit is poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

This map unit is in capability subclass VIIe, nonirrigated.

The Oceanet soils are in the Shallow Sandy, 5 to 9 inch ppt., Wind River Basin range site. The Persayo soils are in the Shallow Loamy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Bributte soils are in the Saline Upland, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Greybull soils are in the Loamy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of very deep gravelly soils are in the Coarse Upland, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of the moderately deep sandy loam soils are in the Sandy, 5 to 9 inch ppt., Wind River Basin range site.

227—Orella-Cadoma-Petrie clay loams, 3 to 30 percent slopes

This map unit is on hills and adjacent alluvial fans. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 40 percent Orella clay loam, 20 percent Cadoma clay loam, and 20 percent Petrie clay loam. The Orella soils are on hill crests and shoulders with 3 to 30 percent slopes, the Cadoma soils are on back slopes and foot slopes with 3 to 20 percent slopes, and the Petrie soils are on foot slopes and alluvial fans with 3 to 8 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Arvada clay loam and 10 percent Silhouette clay loam on alluvial fans. Also included are 5 percent Rock outcrop on hill crests.

The Orella soils are shallow and well drained. They formed in residuum derived dominantly from sodic shale. The surface layer is typically pale olive clay loam 2 inches thick. The underlying material is pale olive, very strongly alkaline, moderately saline clay loam 8 inches thick. Soft sodic shale is at a depth of 10 inches. In some areas the surface layer is clay.

Permeability of the Orella soils is very slow. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Cadoma soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sodic shale. The surface layer is typically light brownish gray clay loam 4 inches thick. The upper part of the subsoil is light brownish gray, strongly alkaline, slightly saline silty clay loam 10 inches thick. The lower part of the subsoil is pale olive, strongly alkaline, moderately saline silty clay loam 14 inches thick. Soft sodic shale is at a depth of 28 inches.

Permeability of the Cadoma soils is slow. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Petrie soils are very deep and well drained. They formed in alluvium derived dominantly from sodic shale. The surface layer is typically pale brown clay loam 5 inches thick. The underlying material, to a depth of 60 inches or more, is light yellowish brown, very strongly alkaline slightly saline clay loam. In some areas the surface layer is silty clay loam.

Permeability of the Petrie soils is very slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly birdfoot sagebrush, western wheatgrass, Indian ricegrass, bottlebrush squirreltail, and gardner saltbush. As the range condition deteriorates, birdfoot sagebrush increases. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 500 pounds of air-dry vegetation in normal years. Production ranges from 700 pounds in favorable years to 350 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited mainly by the salinity and alkalinity of the soils. The depth to bedrock also limits the productivity of the Orella soils. The Orella and Cadoma soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope. Development of livestock watering ponds is only moderately well suited to the Petrie soils because of the slope.

The Cadoma soils are in capability subclass VIe, nonirrigated. The Orella soils are in capability subclass VIIs, nonirrigated. The Petrie soils are in capability subclass VIs, nonirrigated.

The Orella, Cadoma, and Petrie soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Arvada soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Silhouette soils are in the Clayey, 10 to 14 inch ppt., High Plains Southeast range site.

228—Orella-Rock outcrop complex, 3 to 30 percent slopes

This map unit is on ridges and hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,200 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 50 percent Orella silty clay loam and 30 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Cadoma clay loam on the lower part of the hillsides and ridges and 10 percent Petrie clay loam on foot slopes.

The Orella soils are shallow and well drained. They formed in residuum derived from sodic shale. The surface layer is typically light brownish gray, strongly alkaline silty clay loam 2 inches thick. The underlying material is light olive brown, very strongly alkaline, moderately saline silty clay 10 inches thick. Soft sodic shale is at a depth of 12 inches. In some areas the surface layer is clay.

Permeability of the Orella soils is very slow. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

Rock outcrop consists of exposures of soft sodic shale.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Orella soils is mainly western wheatgrass, Indian ricegrass, bottlebrush squirreltail, gardner saltbush, and birdfoot sagebrush. As the range condition deteriorates, birdfoot sagebrush increases. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 500 pounds of air-dry vegetation in normal years. Production ranges from 700 pounds in favorable years to 350 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the alkalinity, available water capacity, and the depth of the soils. The Orella soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Orella soils are in capability subclass VIIs, nonirrigated. The Rock outcrop is in capability class VIII.

This unit is in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site.

229—Orpha loamy sand, 10 to 30 percent slopes

These very deep, excessively drained soils are on stable dunes. They formed in eolian deposits derived from various sources. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,300 to 6,400 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

The surface layer is typically yellowish brown loamy sand 2 inches thick. The underlying material, to a depth of 60 inches or more, is light yellowish brown loamy sand.

Included in this unit are small areas of Tullock loamy sand on hill crests, Vonalee loamy sand on foot slopes, and Dune land. Also included is a similar soil which is calcareous above a depth of 40 inches. Included areas make up 15 percent of the total acreage. Vonalee loamy sand is the dominant inclusion in the western part of the survey area.

Permeability of the Orpha soils is very rapid. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is severe. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat. A few areas are used for homesite development.

The potential plant community on this unit is mainly prairie sandreed, needleandthread, sand bluestem, and Indian ricegrass. As the range condition deteriorates, unpalatable forbs increase in abundance. As the range condition further deteriorates, annuals and broom snakeweed invade. The potential plant community produces about 1,400 pounds of air-dry vegetation in normal years. Production ranges from 1,700 pounds in favorable years to 900 pounds in unfavorable years. Proper management of livestock grazing helps to protect the soils from wind erosion. These soils are poorly suited to livestock watering ponds because of the seepage potential and the slope.

If this unit is used for homesite development, the main limitations are the slope, the hazard of soil blowing, and the hazard of septic tank absorption fields contaminating ground water. To control soil blowing, preserve the existing plant cover and revegetate around construction sites as soon as possible. If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies due to seepage from on-site sewage disposal systems.

This map unit is in capability subclass VIe, nonirrigated.

The Orpha soils are in the Sands, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Tullock soils are in the Sands, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Vonalee soils are in the Sandy, 10 to 14 inch ppt., Northern Plains range site.

230—Orpha-Tullock-Rock outcrop complex, 6 to 45 percent slopes

This map unit is on hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,400 to 6,400 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 45 percent Orpha loamy sand, 25 percent Tullock loamy sand, and 20 percent Rock outcrop. The Orpha soils are leeward of the Rock outcrop on hill crests and hillsides with 6 to 45 percent slopes. The Tullock soils are on hill crests and hillsides with 6 to 45 percent slopes, and Rock outcrop is on the windward side of hills. In some areas Rock outcrop is intermixed with Orpha and Tullock soils. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Keeline sandy loam on foot slopes and in swales. Also included are small areas of blowouts. Included areas make up 10 percent of the total acreage.

The Orpha soils are very deep and excessively drained. They formed in eolian deposits from sandstone. The surface layer is typically pale brown loamy sand 5 inches thick. The underlying material, to a depth of 60 inches or more, is brownish yellow loamy sand. In some areas the surface layer is sand.

Permeability of the Orpha soils is very rapid. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The Tullock soils are moderately deep and excessively drained. They formed in eolian deposits and residuum derived dominantly from sandstone. The surface layer is typically light brownish gray loamy sand 5 inches thick. The underlying material is pale brown loamy sand 19 inches thick. Soft sandstone is at a depth of 24 inches. In some areas the surface layer is sand.

Permeability of the Tullock soils is very rapid. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

Rock outcrop consists of exposures of sandstone.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Orpha and Tullock soils is mainly prairie sandreed, sand bluestem, needleandthread, and Indian ricegrass. As the range condition deteriorates, unpalatable forbs increase in abundance. As the range condition further deteriorates, annuals and broom snakeweed invade. The potential plant community produces about 1,400 pounds of air-dry vegetation in normal years. Production ranges from 1,700 pounds in favorable years to 900 pounds in unfavorable years. Proper management of livestock grazing helps to protect the soils from wind erosion. This unit is poorly suited to livestock watering ponds because of seepage and the slope.

The Orpha soils are in capability subclass VIe, nonirrigated. The Tullock soils are in capability subclass VIIe, nonirrigated. Rock outcrop is in capability class VIII.

The Orpha and Tullock soils are in the Sands, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Keeline soils are in the Sandy, 10 to 14 inch ppt., Northern Plains range site.

231—Orpha-Vonalee-Roughlock complex, 9 to 30 percent slopes

This map unit is on hills and adjacent alluvial fans. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,500 to 6,000 feet. The annual precipitation

is 10 to 14 inches, the annual air temperature is 45 to 48 degrees F, and the frost-free period is 110 to 130 days.

This unit is 35 percent Orpha loamy sand, 30 percent Vonalee loamy sand, and 15 percent Roughlock loam. The Orpha soils are on hill crests and hillsides with 10 to 30 percent slopes, the Vonalee soils are on foot slopes with 9 to 15 percent slopes, and the Roughlock soils are on foot slopes and alluvial fans with 9 to 15 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Forkwood loam on alluvial fans and in swales, Redspear loam on hillsides, and Redsun very channery loam on hill crests. Also included is a soil similar to the Roughlock soils, but which has bedrock at a depth of 40 to 60 inches. Included areas make up 20 percent of the total acreage.

The Orpha soils are very deep and excessively drained. They formed in eolian deposits derived dominantly from sandstone. The surface layer is typically light brownish gray loamy sand 7 inches thick. The underlying material, to a depth of 60 inches or more, is light brownish gray sand.

Permeability of the Orpha soils is very rapid. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is severe. The hazard of wind erosion is severe. Proper management of livestock grazing helps to protect these soils from wind erosion.

The Vonalee soils are very deep and well drained. They formed in eolian deposits derived dominantly from sandstone. The surface layer is typically light brownish gray loamy sand 3 inches thick. The upper part of the subsoil is light brown sandy loam 19 inches thick. The lower part of the subsoil, to a depth of 60 inches or more, is pale brown loamy sand. In some areas the surface layer is sand.

Permeability of the Vonalee soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Roughlock soils are very deep and well drained. They formed in alluvium derived dominantly from siltstone. The surface layer is typically reddish brown loam 4 inches thick. The upper part of the subsoil is reddish brown loam 13 inches thick. The lower part of the subsoil, to a depth of 60 inches or more, is reddish brown silt loam.

Permeability of the Roughlock soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Orpha soils is mainly prairie sandreed, sand bluestem, needleandthread, and Indian ricegrass. As the range condition deteriorates, unpalatable forbs increase in abundance. As the range condition further deteriorates, annuals and broom snakeweed invade. The potential plant community produces about 1,400 pounds of air-dry vegetation in normal years. Production ranges from 1,700 pounds in favorable years to 900 pounds in unfavorable years. Proper management of livestock grazing helps to protect these soils from wind erosion. The Orpha soils are poorly suited to livestock watering ponds because of the seepage potential and the slope.

The potential plant community on the Vonalee soils is mainly needleandthread, Indian ricegrass, and prairie sandreed. As the range condition deteriorates, fringed sagewort and blue grama increase in abundance. As the range condition further deteriorates, broom snakeweed and cheatgrass invade. The potential plant community produces about 1,300 pounds of air-dry vegetation in normal years. Production ranges from 1,600 pounds in favorable years to 750 pounds in unfavorable years. The Vonalee soils are poorly suited to livestock watering ponds because of the seepage potential.

The potential plant community on the Roughlock soils is mainly needleandthread, western wheatgrass, blue grama, green needlegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, pricklypear, cheatgrass, and broom snakeweed invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. The Roughlock soils are only moderately well suited to livestock watering ponds because of the seepage potential.

The Orpha and Roughlock soils are in capability subclass VIe, nonirrigated. The Vonalee soils are in capability subclass IVe, nonirrigated.

The Orpha soils are in the Sands, 10 to 14 inch ppt., Northern Plains range site. The Vonalee soils are in the Sandy, 10 to 14 inch ppt., Northern Plains range site. The Roughlock soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Forkwood soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Redspear and Redsun soils are in the Shallow Loamy, 10 to 14 inch ppt., Northern Plains range site.

232—Persayo-Greybull association, 6 to 30 percent slopes

This map unit is on ridges and hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,700 to 6,200 feet. The annual precipitation is 7 to 9 inches, the annual air temperature is 45 to 47 degrees F, and the frost-free period is 110 to 120 days.

This unit is 45 percent Persayo loam and 40 percent Greybull loam. The Persayo soils are on shoulders and crests with 10 to 30 percent slopes and the Greybull soils are on back slopes and foot slopes with 6 to 15 percent slopes.

Included in this unit are Enos loamy sand on back slopes, Oceanet sandy loam on crests, and Uffens very fine sandy loam and Wallson loamy fine sand on foot slopes. Included areas make up about 15 percent of the total acreage.

The Persayo soils are shallow and well drained. They formed in residuum and slopewash alluvium derived dominantly from siltstone and shale. The surface layer is typically pale brown loam 5 inches thick. The underlying material is light yellowish brown clay loam 10 inches thick. Soft shale is at a depth of 15 inches.

Permeability of the Persayo soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Greybull soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from shale. The upper part of the surface layer is typically light brownish gray loam 2 inches thick. The lower part is pale brown loam 3 inches thick. The upper 12 inches of the underlying material is light brownish gray clay loam. The lower 7 inches is light yellowish brown sandy clay loam. Soft sandy shale is at a depth of 24 inches.

Permeability of the Greybull soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Persayo soils is mainly bluebunch wheatgrass, western wheatgrass, Indian ricegrass, needleandthread, and big sagebrush. As the range condition deteriorates, blue grama and unpalatable forbs increase in abundance. As the range condition further deteriorates, annuals and pricklypear invade. The potential plant community produces about 250 pounds of air-dry vegetation in normal years. Production ranges from 350 pounds in favorable years to 125 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity, depth of the soils, and by low annual precipitation. The Persayo soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The potential plant community on the Greybull soils is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, Indian ricegrass, Sandberg bluegrass, and big sagebrush. As the range condition deteriorates, blue grama, Sandberg bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, annuals and pricklypear invade. The potential plant community produces about 400 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the low annual precipitation. The Greybull soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Persayo soils are in capability subclass VIIe, nonirrigated. The Greybull soils are in capability subclass VIe, nonirrigated.

The Persayo soils are in the Shallow Loamy, 5 to 9 inch ppt., Wind River Basin range site. The Greybull soils are in the Loamy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Enos and Wallson soils are in the Sandy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Oceanet soils are in the Shallow Sandy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Uffens soils are in the Impervious Clay, 5 to 9 inch ppt., Wind River Basin range site.

233—Pesmore-Asholler-Rock outcrop complex, 15 to 55 percent slopes

This map unit is on knolls and mountain foothills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,200 to 7,600 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 37 to 42 degrees F, and the frost-free period is 90 to 110 days.

This unit is 35 percent Pesmore very gravelly sandy loam, 20 percent Asholler gravelly loam, and 20 percent Rock outcrop. The Pesmore soils are on foot slopes; the Asholler soils are on crests, shoulders, and back slopes. The Rock outcrop is on escarpments and ridge crests. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Crago gravelly loam on foot slopes and very deep soils similar to the Pesmore soils in narrow valleys. Also included are small areas of soils similar to the Asholler soils but with clay and carbonate accumulations in the subsoil intermixed with the Asholler soils. Included areas make up 25 percent of the total acreage.

The Pesmore soils are moderately deep and well drained. They formed in residuum, colluvium, and slopewash alluvium derived dominantly from granite. The surface layer is typically brown very gravelly sandy loam 3 inches thick. The upper part of the subsoil is brown very cobbly sandy clay loam 6 inches thick. The next 9 inches is light yellowish brown very cobbly sandy clay loam. The lower 8 inches of the subsoil is light brownish gray very cobbly sandy clay loam. Hard fractured granite is at a depth of 26 inches.

Permeability of the Pesmore soils is moderate. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Asholler soils are very shallow or shallow and are somewhat excessively drained. They formed in residuum and slopewash alluvium derived from granite. The surface layer is typically brown gravelly loam 3 inches thick. The next layer is yellowish brown very gravelly loam 4 inches thick. The underlying material is pale brown very gravelly loam 10 inches thick. Hard fractured granite is at a depth of 17 inches.

Permeability of the Asholler soils is moderate. Available water capacity is very low. The effective rooting depth is 6 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

Rock outcrop consists of exposures of hard granite.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Pesmore soils is mainly bluebunch wheatgrass, western wheatgrass, needleandthread, mutton bluegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas.

The potential plant community on the Asholler soils is mainly bluebunch wheatgrass, bottlebrush squirreltail, western wheatgrass, and black sagebrush. As the range condition deteriorates, black sagebrush and threadleaf sedge increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 450 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 250 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas.

The Pesmore and Asholler soils are in capability subclass VIIs, nonirrigated. Rock outcrop is in capability class VIII.

The Pesmore soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Asholler soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Crago soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of very deep soils similar to the Pesmore soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

234—Petrie clay loam, dry, 0 to 3 percent slopes

These very deep, well drained soils are on alluvial fans and terraces. They formed in alluvium derived dominantly from sodic shale. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

The surface layer is typically light brownish gray, strongly alkaline clay loam 3 inches thick. The upper 6 inches of the underlying material is grayish brown, strongly alkaline clay loam. The lower part, to a depth of 60 inches or more, is grayish brown, strongly alkaline clay. In some areas the surface layer is silt loam.

Included in this unit are small areas of Arvada clay loam intermixed with the Petrie soils and loamy sodic soils adjacent to drainageways. Included areas make up 15 percent of the total acreage.

Permeability of the Petrie soils is very slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly gardner saltbush, western wheatgrass, Indian ricegrass, bottlebrush squirreltail, and winterfat. As the range condition deteriorates, birdfoot sagebrush and Sandberg bluegrass increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 500 pounds of air-dry vegetation in normal years. Production ranges from 650 pounds in favorable years to 300 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity, alkalinity, and available water capacity of the soils. Loss of the surface layer results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for grazing. This unit is well suited to livestock watering ponds.

This map unit is in capability subclass VIs, nonirrigated.

The Petrie soils are in the Saline Upland, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Arvada and loamy sodic soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site.

235—Petrie-Zigweid complex, wet, 0 to 3 percent slopes

This map unit is in drainageways and basins. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

This unit is 40 percent Petrie clay loam and 40 percent Zigweid loam. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are soils similar to the Zigweid, wet soils with a sandy loam substratum. Also included are small areas of Salt flats. Included areas make up 20 percent of the total acreage.

The Petrie soils are very deep and somewhat poorly drained. They formed in alluvium derived dominantly from shale. The surface layer is typically light yellowish brown clay loam 4 inches thick. The underlying material, to a depth of 60 inches or more, is yellowish brown, very strongly alkaline clay.

Permeability of the Petrie soils is very slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more for plants that can tolerate wet, saline, and alkaline soils, but it is 5 to 15 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate. These soils have a seasonal high water table in most areas at a depth of 2 to 3 feet from May through September. The water table is the result of irrigation of this or surrounding soils. The depth to the water table varies somewhat from year to year and from field to field, depending on the management of the irrigation water. These soils are subject to frequent very long periods of flooding from May through September, as a result of runoff of irrigation water from adjacent soils.

The Zigweid soils are very deep and somewhat poorly drained. They formed in alluvium derived dominantly from shale. The surface layer is typically brown loam 2 inches thick. The subsoil is yellowish brown, slightly saline clay loam 13 inches thick. The substratum is light yellowish brown, slightly saline clay loam to a depth of 60 inches or more. These soils are outside the characteristics defined for the Zigweid series because it has a seasonal high water table at a depth of 1.5 to 3 feet.

Permeability of the Zigweid soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more for plants that can tolerate wet, saline, and alkaline soils, but it is 5 to 15 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate. A seasonal high water table is at a depth of 1.5 to 3 feet from May through September. This water table is the result of irrigation of this or surrounding soils. The depth to the water table varies from year to year and from field to field, depending on the management of the irrigation water. These soils are subject to frequent very long periods of flooding from May through September, as a result of runoff of irrigation water from adjacent soils.

This unit is used for irrigated hay and pasture, homesite development, livestock grazing, or for wildlife habitat.

The potential plant community on this unit is mainly alkali sacaton, inland saltgrass, western wheatgrass, alkali bluegrass, basin wildrye, and greasewood. As the range condition deteriorates, inland saltgrass and greasewood increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 3,000 pounds of air-dry vegetation in normal years. Production ranges from 3,400 pounds in favorable years to 2,500 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity and alkalinity of the soils. Grazing should be delayed until the soils have drained sufficiently and is firm enough to withstand trampling by livestock. Loss of the surface layer results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for grazing. This unit is moderately well suited to livestock watering ponds. Wetness limits the types of construction equipment that can be used. Construction of the ponds is best accomplished during the late fall when the water table is at its deepest depth.

If this unit is used for irrigated hay and pasture, the main limitation is the salinity and alkalinity of the soils. To maximize production, species of plants that tolerate saline and alkaline soils should be planted. Irrigation water should be applied carefully to prevent the raising of the high water table, and ought to be applied at a rate that ensures optimum production without excessive deep percolation. Applications of irrigation water should be adjusted to the available water capacity and water intake rate of the soils and to the crop needs. Sprinkler irrigation is the most suitable method of applying water.

If this unit is used for homesite development, the main limitations are the frequent flooding and high water table of both soils. The permeability and the shrink-swell potential of the Petrie soils are also limitations. The high water table makes construction of building foundations difficult and limits the construction of buildings with basements. Restricted permeability and the high water table increase the possibility of failure of septic tank absorption fields. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has low shrink-swell potential.

This map unit is in capability subclass VIs, nonirrigated, and irrigated.

The Petrie and Zigweid soils are in the Saline Subirrigated, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of very poorly drained soils are in the Wetland, 10 to 14 inch ppt., High Plains Southeast range site.

236—Petrie-Arvada complex, 0 to 6 percent slopes

This map unit is on alluvial fans and terraces. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 6,100 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 50 percent Petrie clay loam and 30 percent Arvada fine sandy loam. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Ulm loam and 10 percent Slickspots.

The Petrie soils are very deep and well drained. They formed in alluvium derived dominantly from sodic shale. The surface layer is typically light yellowish brown clay loam 1 inch thick. The upper part of the underlying material is light yellowish brown, strongly alkaline clay loam 4 inches thick. The next 14 inches is light yellowish brown, strongly alkaline, slightly saline clay. The lower part, to a depth of 60 inches or more, is light yellowish brown, very strongly alkaline, slightly saline clay. In some areas the surface layer is clay.

Permeability of the Petrie soils is very slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Arvada soils are very deep and well drained. They formed in alluvium derived dominantly from sodic shale. The surface layer is typically light brownish gray fine sandy loam 2 inches thick. The upper 16 inches of the subsoil is olive, very strongly alkaline, moderately saline silty clay. The lower 20 inches of the subsoil is pale olive, very strongly alkaline, strongly saline clay loam. The substratum, to a depth of 60 inches or more, is pale olive, very strongly alkaline, strongly saline clay loam. In some areas the surface layer is loam, silty clay loam, or clay loam.

Permeability of the Arvada soils is very slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, Indian ricegrass, gardner saltbush, and birdfoot sagebrush. As the range condition deteriorates, birdfoot sagebrush increases. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 500 pounds of air-dry vegetation in normal years. Production ranges from 700 pounds in favorable years to 350 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the alkalinity of the soils. This unit is only moderately well suited to livestock watering ponds because of the slope.

This map unit is in capability subclass VIs, nonirrigated.

The Petrie and Arvada soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Ulm soils are in the Clayey, 10 to 14 inch ppt., High Plains Southeast range site.

237—Peyton-Holderness loams, 3 to 15 percent slopes

This map unit is on plateaus. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 7,000 to 7,600 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 35 to 40 degrees F, and the frost-free period is 80 to 100 days.

This unit is 45 percent Peyton loam and 35 percent Holderness loam. The Peyton soils are on convex slopes of 6 to 15 percent, and the Holderness soils are on concave slopes of 3 to 10 percent. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are Bosler sandy loam on nearly level areas, Pinelli loam in swales, and moderately deep sandy clay loam soils over hard sandstone intermixed with the Peyton soils. Also included are small areas of very stony soils and Rock outcrop on hill crests. Included areas make up 20 percent of the total acreage.

The Peyton soils are very deep and well drained. They formed in alluvium derived from sandstone and shale. The surface layer is typically dark brown loam 3 inches thick. The upper part of the subsoil is dark brown and brown clay loam 15 inches thick. The lower 9 inches of the subsoil is pale brown sandy clay loam. The substratum, to a depth of 60 inches or more, is pale brown sandy loam. In some areas the surface layer is sandy loam.

Permeability of the Peyton soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Holderness soils are very deep and well drained. They formed in alluvium derived from sandstone and shale. The surface layer is typically dark grayish brown loam 9 inches thick. The upper 8 inches of the subsoil is brown clay. The lower 9 inches of the subsoil is brown clay loam. The substratum, to a depth of 60 inches or more, is grayish brown sandy clay loam. In some areas the surface layer is sandy loam.

Permeability of the Holderness soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly bluebunch wheatgrass, Idaho fescue, prairie junegrass, Griffith wheatgrass, Columbia needlegrass, and sagebrush. As the range condition deteriorates, blue grama, threadleaf sedge, sagebrush, and rabbitbrush increase in abundance. As the range condition further deteriorates, broom snakeweed, pricklypear, annual grasses, and annual forbs invade. The potential plant community produces about 1,500 pounds of air-dry vegetation in normal years. Production ranges from 2,000 pounds in favorable years to 800 pounds in unfavorable years. The Peyton soils are poorly suited to livestock watering ponds because of the seepage potential. The Holderness soils are only moderately well suited to livestock watering ponds because of the slope.

This map unit is in capability subclass IVe, nonirrigated.

The Peyton and Holderness soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Bosler and Pinelli soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of moderately deep sandy clay loam soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of very stony soils are in the Coarse Upland, 15 to 19 inch ppt., Foothills and Mountains Southeast range site.

238—Pits and dumps

This map unit consists of areas of open excavations and accompanying waste piles. Pits may contain water. Most of the areas are sand and gravel excavations. Other areas are bentonite, uranium, or landfill excavations.

239—Pokeman-Threetop loams, 2 to 12 percent slopes

This map unit is on dip slopes. The native vegetation is mainly grasses, sedges, forbs, and shrubs. Elevation is 5,800 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 46 degrees F, and the frost-free period is 110 to 120 days.

This unit is 50 percent Pokeman loam and 30 percent Threetop loam. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Roughlock loam in swales; 5 percent Rekop loam on sides of draws; and 5 percent moderately deep, gypsiferous loam soils on the lower portion of dip slopes.

The Pokeman soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from gypsiferous bedrock. The surface layer is typically reddish brown loam 1 inch thick. The upper 9 inches of the subsoil is reddish brown clay loam. The lower 14 inches of the subsoil is light reddish brown clay loam. Soft gypsum bedrock is at a depth of 24 inches.

Permeability of the Pokeman soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Threetop soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone. The surface layer is typically brown loam 2 inches thick. The upper 9 inches of the subsoil is brown clay loam. The next 17 inches is pink gravelly loam. The lower 9 inches of the subsoil is light brown gravelly loam. Hard sandstone is at a depth of 37 inches.

Permeability of the Threetop soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Pokeman soils is mainly bluebunch wheatgrass, western wheatgrass, needleandthread, mutton bluegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils.

The potential plant community on the Threetop soils is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, mutton bluegrass, Indian ricegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years.

This unit is poorly suited to livestock watering ponds because of the depth to bedrock.

This map unit is in capability subclass IVe, nonirrigated.

The Pokeman soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Threetop soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Rekop and moderately deep gypsiferous loam soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Roughlock soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

240—Poposhia-Blazon complex, 3 to 15 percent slopes

This map unit is on hills and adjacent draws. The native vegetation is mainly grasses, forbs, and sedges. Elevation is 6,000 to 6,700 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

This unit is 60 percent Poposhia very fine sandy loam and 20 percent Blazon loam. The Poposhia soils are in draws with 3 to 10 percent slopes and the Blazon soils are on hills with 5 to 15 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Rencot gravelly sandy loam on knolls and hills; 5 percent very deep, very strongly alkaline soils in swales; and 5 percent Rock outcrop on hills.

The Poposhia soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from sandstone and shale. The surface layer is typically brown very fine sandy loam 4 inches thick. The underlying material, to a depth of 60 inches or more, is brown loam.

Permeability of the Poposhia soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Blazon soils are shallow and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone and shale. The surface layer is typically dark brown loam 4 inches thick. The underlying material is light olive brown loam 6 inches thick. Soft sandstone is at a depth of 10 inches.

Permeability of the Blazon soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Poposhia soils is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. The Poposhia soils are only moderately well suited to livestock watering ponds because of the seepage potential and the slope.

The potential plant community on the Blazon soils is mainly bluebunch wheatgrass, western wheatgrass, mutton bluegrass, black sagebrush, and needleandthread. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and by the depth of the soils. The Blazon soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Poposhia soils are in capability subclass IVe, nonirrigated. The Blazon soils are in capability subclass VIIs, nonirrigated.

The Poposhia soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Blazon soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Rencot soils are in the

Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of the very deep, very strongly alkaline soils are in the Saline Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

241—Rawlins-McFadden-Blackhall complex, 2 to 20 percent slopes

This map unit is on pediments dissected by numerous steep draws. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,500 to 6,800 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 90 to 100 days.

This unit is 30 percent Rawlins sandy loam, 25 percent McFadden sandy loam, and 20 percent Blackhall fine sandy loam. The Rawlins soils are on pediments with 2 to 10 percent slopes, the McFadden soils are on foot slopes of pediment breaks and in draws with 2 to 10 percent slopes, and the Blackhall soils are on back slopes of pediment breaks with 10 to 20 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Blazon loam and Cragosen Variant very gravelly sandy loam on moderately steep back slopes of pediment breaks, Edlin sandy loam intermixed with the McFadden soils, and Rock River sandy loam and Brownsto Variant gravelly sandy loam intermixed with the Rawlins soils. Included areas make up 25 percent of the total acreage.

The Rawlins soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically brown sandy loam 2 inches thick. The upper part of the subsoil is yellowish brown sandy clay loam 5 inches thick. The next 11 inches is very pale brown sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is light gray gravelly sandy loam.

Permeability of the Rawlins soils is moderate. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The McFadden soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from sandstone. The surface layer is typically brown sandy loam 2 inches thick. The upper 8 inches of the subsoil is light yellowish brown sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown gravelly sandy loam. In some areas the surface layer is gravelly sandy loam.

Permeability of the McFadden soils is moderately rapid. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

The Blackhall soils are shallow and somewhat excessively drained. They formed in residuum derived dominantly from sandstone. The surface layer is typically pale brown fine sandy loam 2 inches thick. The underlying material is light yellowish brown fine sandy loam 11 inches thick. Soft sandstone is at a depth of 13 inches.

Permeability of the Blackhall soils is moderately rapid. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly bluebunch wheatgrass, Indian ricegrass, needleandthread, threadleaf sedge, mutton bluegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge increases. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils, as well as by the depth of the Blackhall soils. This unit is poorly suited to livestock watering ponds because of the seepage potential of the McFadden and Rawlins soils, and by the depth to bedrock and the slope of the Blackhall soils.

The Rawlins and McFadden soils are in capability subclass IVe, nonirrigated. The Blackhall soils are in capability subclass VIIe, nonirrigated.

The Rawlins, McFadden, and Blackhall soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Blazon soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Rock River soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Brownsto Variant and Cragosen Variant soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site.

242—Rawlins-Rock River sandy loams, 3 to 15 percent slopes

This map unit is on alluvial fans and terraces. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 6,400 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 90 to 100 days.

This unit is 65 percent Rawlins sandy loam and 20 percent Rock River sandy loam. The Rawlins soils are on convex slopes, and the Rock River soils are on concave slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Blackhall sandy loam, Blazon loam, and Brownsto gravelly loam on hill crests. Included areas make up 15 percent of the total acreage.

The Rawlins soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically brown sandy loam 2 inches thick. The upper part of the subsoil is brown sandy clay loam 6 inches thick. The next 24 inches is very pale brown sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is light gray sandy loam. In some areas the surface layer is loamy sand.

Permeability of the Rawlins soils is moderate. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Rock River soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically grayish brown sandy loam 3 inches thick. The upper 17 inches of the subsoil is brown sandy clay loam. The next 7 inches is light brownish gray sandy loam. The next part, to a depth of 43 inches, is light gray sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is light brownish gray gravelly sandy loam. In some areas the surface layer is loamy sand.

Permeability of the Rock River soils is moderate. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Rawlins soils is mainly needleandthread, bluebunch wheatgrass, Indian ricegrass, threadleaf sedge, mutton bluegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge increases. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils.

The potential plant community on the Rock River soils is mainly needleandthread, thickspike wheatgrass, Indian ricegrass, threadleaf sedge, and silver sagebrush. As the range condition deteriorates, silver sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

This unit is poorly suited to livestock watering ponds because of the seepage potential and the slope.

This map unit is in capability subclass IVe, nonirrigated.

The Rawlins soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. The Rock River soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Blackhall and Brownsto soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Blazon soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

243—Redsun-Rock outcrop complex, 15 to 30 percent slopes

This map unit is on dip slopes. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,400 to 6,700 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 50 percent Redsun extremely channery loam and 30 percent Rock outcrop. The Redsun soils are on dip slopes with 15 to 30 percent slopes, and the Rock outcrop is intermixed with the Redsun soils and on escarpments.

Included in this unit are 10 percent Redspear loam intermixed with the Redsun soils and 10 percent Roughlock loam on gently sloping foot slopes.

The Redsun soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from siltstone. The surface layer is typically brown extremely channery loam 4 inches thick. The upper 5 inches of the subsoil is light brown extremely channery loam. The lower 3 inches of the subsoil is light reddish brown extremely channery loam. Hard siltstone bedrock is at a depth of 12 inches. In a few areas the soils are over hard brown sandstone.

Permeability of the Redsun soils is moderate. Available water capacity is very low. The effective rooting depth is 4 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

Rock outcrop consists of exposures of red siltstone, but in a few areas it is exposures of brown sandstone.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Redsun soils is mainly juniper, bluebunch wheatgrass, needleandthread, sagebrush, and mountainmahogany. As the range condition deteriorates, juniper and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,000 pounds of air-dry vegetation in normal years. Production ranges from 1,300 pounds in favorable years to 800 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. This unit is poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Redsun soils are in capability subclass VIIs, nonirrigated. The Rock outcrop is in capability class VIII.

The Redsun soils are in the Shallow Breaks, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Redspear soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Roughlock soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

244—Redsun-Rock outcrop-Redbow complex, 3 to 15 percent slopes

This map unit is on dip slopes. The native vegetation is mainly grasses, sedges, and shrubs. Elevation is 5,700 to 6,800 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 46 degrees F, and the frost-free period is 110 to 120 days.

This unit is 45 percent Redsun very channery loam, 25 percent Rock outcrop, and 15 percent Redbow loam. The Redsun soils are on planar slopes of 3 to 15 percent, the Rock outcrop is on planar slopes and sides of draws, and the Redbow soils are on convex slopes of 3 to 10 percent. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Redspear loam on convex slopes and 5 percent Roughlock loam on alluvial fans on the lower portions of dip slopes.

The Redsun soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from siltstone or limestone. 40 percent of the surface is typically covered with channers. The surface layer is yellowish red very channery loam 4 inches thick. The subsoil is light reddish brown extremely flaggy loam 3 inches thick. Hard fractured limestone is at a depth of 7 inches.

Permeability of the Redsun soils is moderate. Available water capacity is very low. The effective rooting depth is 4 to 20 inches. Runoff is rapid and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

Rock outcrop consists of exposures of sandstone and limestone.

The Redbow soils are moderately deep and well drained. They formed in slopewash alluvium derived dominantly from limestone and siltstone. The surface layer is typically yellowish red loam 3 inches thick. The upper part of the subsoil is yellowish red loam 8 inches thick. The lower 16 inches of the subsoil is yellowish red loam containing a high amount of calcium carbonate. Hard fractured limestone is at a depth of 27 inches.

Permeability of the Redbow soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Redsun soils is mainly bluebunch wheatgrass, needleandthread, western wheatgrass, and black sagebrush. As the range condition deteriorates, black sagebrush and threadleaf sedge increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 450 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 250 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils.

The potential plant community on the Redbow soils is mainly western wheatgrass, needleandthread, green needlegrass, blue grama, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, pricklypear, cheatgrass, and broom snakeweed invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

This unit is poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Redsun soils are in capability subclass VIIs, nonirrigated. The Redbow soils are in capability subclass IVe, nonirrigated. The Rock outcrop is capability class VIII.

The Redsun soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site. The Redbow soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Redspear soils are in the Shallow Loamy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Roughlock soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site.

245—Rekop-Rock outcrop complex, 5 to 40 percent slopes

This map unit is on hills. The native vegetation is mainly grasses and forbs. Elevation is 5,600 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 47 degrees F, and the frost-free period is 110 to 120 days.

This unit is 50 percent Rekop loam and 25 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Roughlock loam on alluvial fans and in swales, 10 percent very shallow gypsiferous loam soils intermingled with the Rekop soils, and 5 percent moderately deep, gypsiferous loam soils on foot slopes and in swales.

The Rekop soils are shallow and well drained. They formed in slopewash alluvium and residuum derived dominantly from gypsum, siltstone, and sandstone bedrock. The surface layer is typically reddish brown loam 1 inch thick. The next layer is reddish brown loam 6 inches thick. The underlying material is light reddish brown silt loam 5 inches thick. Soft gypsum bedrock interbedded with soft red sandstone is at a depth of 12 inches.

Permeability of the Rekop soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

Rock outcrop consists of exposures of soft gypsum, siltstone, and sandstone bedrock.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Rekop soils is mainly bluebunch wheatgrass, western wheatgrass, needleandthread, mutton bluegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas.

The Rekop soils are in capability subclass VIIe, nonirrigated. The Rock outcrop is in capability class VIII.

The Rekop soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Roughlock and moderately deep gypsiferous loam soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of very shallow gypsiferous loam soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site.

246—Relsob-Peyton sandy loams, 3 to 15 percent slopes

This map unit is on hills and in adjacent swales. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,700 to 7,600 feet. The annual precipitation is 12 to 16 inches, the annual air temperature is 36 to 43 degrees F, and the frost-free period is 80 to 100 days.

This unit is 45 percent Relsob sandy loam and 35 percent Peyton sandy loam. The Relsob soils are on hill crests and hillsides with 3 to 15 percent slopes and the Peyton soils are in swales with 3 to 6 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Cragosen gravelly loam on knobs and hill crests, 5 percent Nunnston loam in swales, and 5 percent Pinelli loam on the gently sloping upper portions of hillslopes.

The Relsob soils are very deep and well drained. They formed in alluvium derived dominantly from arkosic sandstone. The surface layer is typically brown sandy loam 3 inches thick. The upper 5 inches of the subsoil is brown sandy clay loam. The next 8 inches is yellowish brown sandy clay loam. The lower 3 inches of the subsoil is light yellowish brown sandy clay loam. The substratum, to a depth of 60 inches or more, is brownish yellow sand.

Permeability of the Relsob soils is moderate in the subsoil and rapid in the substratum. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Peyton soils are very deep and well drained. They formed in alluvium derived from various sources. These soils receive additional moisture in the form of drifted snow. The surface layer is typically dark brown sandy loam 5 inches thick. The upper part of the subsoil is brown sandy clay loam 29 inches thick. The lower 14 inches of the subsoil is pale brown sandy loam. The substratum, to a depth of 60 inches or more, is pale brown sand.

Permeability of the Peyton soils is moderate. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Relsob soils is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, mutton bluegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years.

The potential plant community on the Peyton soils is mainly bluebunch wheatgrass, Idaho fescue, prairie junegrass, Griffith wheatgrass, Columbia needlegrass, and big sagebrush. As the range condition deteriorates, blue grama, threadleaf sedge, big sagebrush, and rabbitbrush increase in abundance. As the range condition further deteriorates, broom snakeweed, pricklypear, annual grasses, and annual forbs invade. The potential plant community produces about 1,500 pounds of air-dry vegetation in normal years. Production ranges from 2,000 pounds in favorable years to 800 pounds in unfavorable years.

This unit is poorly suited to livestock watering ponds because of the seepage potential.

This unit is in capability subclass IVe, nonirrigated.

The Relsob soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Peyton soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Cragosen soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Nunnston soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Pinelli soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

247—Rencot-Blazon complex, 15 to 40 percent slopes

This map unit is on dip slopes, ridges, hills, and escarpments. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,500 to 7,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 39 to 43 degrees F, and the frost-free period is 100 to 110 days.

This unit is 50 percent Rencot very channery loam and 35 percent Blazon gravelly loam. The components of this unit are so intricately intermingled than it was not practical to map them separately.

Included in this unit are small areas of Moyerson clay loam soils and Rock outcrop. Included areas make up 15 percent of the total acreage.

The Rencot soils are shallow and well drained. They formed in residuum derived dominantly from sandstone. The surface layer is typically pale brown very channery loam 2 inches thick. The subsoil is light yellowish brown very channery loam 9 inches thick. Hard fractured sandstone is at a depth of 11 inches.

Permeability of the Rencot soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Blazon soils are shallow and well drained. They formed in residuum and slopewash alluvium derived dominantly from sandstone, siltstone, and shale. The surface layer is typically brown gravelly loam 3 inches thick. The underlying material is pale brown gravelly loam 13 inches thick. Soft siltstone is at a depth of 16 inches. In some areas up to 40 percent of the surface is covered with rock fragments.

Permeability of the Blazon soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Rencot soils is mainly bluebunch wheatgrass, bottlebrush squirreltail, western wheatgrass, and black sagebrush. As the range condition deteriorates, black sagebrush and threadleaf sedge increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 450 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 250 pounds in unfavorable years.

The potential plant community on the Blazon soils is mainly bluebunch wheatgrass, western wheatgrass, mutton bluegrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

The production of vegetation suitable for livestock grazing on this unit is limited by the available water capacity and depth of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. This unit is poorly suited to livestock watering ponds because of the slope and the depth to bedrock.

This map unit is in capability subclass VIIe, nonirrigated.

The Rencot soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site. The Blazon soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Moyerson soils are in the Shallow Clayey, 10 to 14 inch ppt., High Plains Southeast range site.

248—Rencot-Rock outcrop complex, 5 to 15 percent slopes

This map unit is on mountain dip slopes. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,400 to 7,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 36 to 43 degrees F, and the frost-free period is 80 to 110 days.

This unit is 60 percent Rencot gravelly loam and 20 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Fiveoh loam on hillslopes below red Rock outcrops, Rock River sandy clay loam in swales, and Thermopolis gravelly loam on low knobs. Also included are small areas with slopes greater than 15 percent. Included areas make up 20 percent of the total acreage.

The Rencot soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from sandstone. 30 percent of the surface is typically covered with gravel, cobbles, and channers. The surface layer is dark yellowish brown gravelly loam 5 inches thick. The upper part of the subsoil is yellowish brown very gravelly loam 7 inches thick. The lower part of the subsoil is light yellowish brown very gravelly loam 5 inches thick. Hard fractured sandstone is at a depth of 17 inches.

Permeability of the Rencot soils is moderate. Available water capacity is very low. The effective rooting depth is 8 to 20 inches. Runoff is rapid and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

Rock outcrop consists of exposures of sandstone.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Rencot soils is mainly bluebunch wheatgrass, bottlebrush squirreltail, western wheatgrass, and black sagebrush. As the range condition deteriorates, black sagebrush and threadleaf sedge increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 450 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 250 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. This unit is poorly suited to livestock watering ponds because of the depth to bedrock.

The Rencot soils are in capability subclass VIIs, nonirrigated. The Rock outcrop is capability class VIII.

The Rencot soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Thermopolis soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Fiveoh and Rock River soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

249—Rencot-Duffson association, rolling

This map unit is on broad dip slopes. The slope is 5 to 25 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 39 to 43 degrees F, and the frost-free period is 100 to 110 days.

This unit is 45 percent Rencot gravelly loam and 35 percent Duffson loam. The Rencot soils are on planar and convex slopes of 5 to 25 percent, and the Duffson soils are on concave slopes of 5 to 20 percent.

Included in this unit are small areas of Brownsto very cobbly loam on colluvial slopes below short steep escarpments and Castner channery loam intermixed with the Rencot soils. Also included are Rock River sandy loam intermixed with the Duffson soils; and Rock outcrop on ridge crests, short steep escarpments, and intermixed with the Rencot soils. Included areas make up 20 percent of the total acreage.

The Rencot soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from sandstone. The surface layer is typically yellowish brown gravelly loam 4 inches thick. The upper 5 inches of the subsoil is yellowish brown very gravelly loam. The lower part of the subsoil is pale brown very cobbly loam 6 inches thick. Hard sandstone is at a depth of 15 inches.

Permeability of the Rencot soils is moderate. Available water capacity is very low. The effective rooting depth is 8 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Duffson soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone. The surface layer is typically brown loam 2 inches thick. The upper 8 inches of the subsoil is brown clay loam. The lower 12 inches of the subsoil is very pale brown loam. Hard sandstone bedrock is at a depth of 22 inches. In a few areas 10 to 20 percent of the surface is covered by channers.

Permeability of the Duffson soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Rencot soils is mainly bluebunch wheatgrass, bottlebrush squirreltail, western wheatgrass, and black sagebrush. As the range condition deteriorates, black sagebrush and threadleaf sedge increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 450 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 250 pounds in unfavorable years. The production of vegetation suitable for livestock grazing on these soils are limited by the available water capacity and depth of the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The potential plant community on the Duffson soils is mainly bluebunch wheatgrass, western wheatgrass, mutton bluegrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing on these soils are limited by the available water capacity and depth of the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock.

The Rencot soils are in capability subclass VIIs, nonirrigated. The Duffson soils are in capability subclass VIe, nonirrigated.

The Rencot soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site. The Duffson soils are in the Shallow Loamy, 10 to 14 ppt., High Plains Southeast range site. Inclusions of Brownsto soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Castner soils are in the Rocky Hills, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Rock River soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

250—Rencot-Thermopolis-Rock outcrop association, 5 to 40 percent slopes

This map unit is on dip slopes that have a cap of hard sandstone overlying softer siltstone. The dip slopes are dissected by numerous draws. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,200 to 7,400 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 37 to 43 degrees F, and the frost-free period is 90 to 110 days.

This unit is 40 percent Rencot very gravelly sandy loam, 30 percent Thermopolis channery loam, and 15 percent Rock outcrop. The Rencot soils are in areas with a slope of 5 to 15 percent, the Thermopolis soils are in areas with a slope of 15 to 40 percent, and Rock outcrop is on escarpments.

Included in this unit are small areas of Fiveoh loam on foot slopes of valley sides; Rekop loam on dip slopes; and very deep, reddish brown very gravelly loam soils on foot slopes of draws. Included areas make up 15 percent of the total acreage.

The Rencot soils are shallow and well drained. They formed in residuum derived dominantly from sandstone. The surface layer is typically brown very gravelly sandy loam 3 inches thick. The subsoil is brown very channery sandy loam 7 inches thick. Hard fractured sandstone is at a depth of 10 inches.

Permeability of the Rencot soils is moderately rapid. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

The Thermopolis soils are shallow and well drained. They formed in slopewash alluvium and residuum derived dominantly from siltstone. The surface layer is typically red channery loam 4 inches thick. The underlying material is light red loam 7 inches thick. Soft, platy, red siltstone is at a depth of 11 inches.

Permeability of the Thermopolis soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

Rock outcrop consists of exposures of hard sandstone and soft red siltstone.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Rencot soils is mainly bluebunch wheatgrass, bottlebrush squirreltail, western wheatgrass, and black sagebrush. As the range condition deteriorates, black sagebrush and threadleaf sedge increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 450 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 250 pounds in unfavorable years.

The potential plant community on the Thermopolis soils is mainly bluebunch wheatgrass, western wheatgrass, mutton bluegrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

The production of vegetation suitable for livestock grazing on this unit is limited by the available water capacity and depth of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. This unit is poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Rencot soils are in capability subclass VIIs, nonirrigated. The Thermopolis soils are in capability subclass VIIe, nonirrigated. The Rock outcrop is in capability class VIII.

The Rencot soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site. The Thermopolis soils are the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Fiveoh soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Rekop and very deep very gravelly loam soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

251—Rivra sandy loam, 0 to 6 percent slopes

These very deep, moderately well drained soils are on flood plains of the North Platte River and its major tributaries. They formed in alluvium derived from various sources. Relief is commonly hummocky. The native vegetation is mainly grasses, shrubs, and deciduous trees. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 110 to 120 days.

The surface layer is typically brown sandy loam 7 inches thick. The underlying material, to a depth of 60 inches or more, is pale brown very gravelly sand. In some areas the surface layer is loam or fine sandy loam.

Included in this unit are small areas of soils with a clayey surface layer overlying sand and gravel in depressions, low lying areas which frequently flood; and barren sand and gravel bars. Included areas make up 20 percent of the total acreage.

Permeability of the Rivra soils is very rapid. Available water capacity is very low. The effective rooting depth is 60 inches or more for plants that can tolerate a water table, but it is 36 to 60 inches for plants that cannot. A seasonal high water table is at a depth of 3 to 5 feet from April through June. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe. Although somewhat protected from flooding by major water-control structures, these soils are subject to a rare hazard of flooding during prolonged, high-intensity storms. Areas of channeling and deposition are common near stream banks.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used as a source of gravel and sand or for homesite and urban development.

The potential plant community on the Rivra soils is mainly green needlegrass, western wheatgrass, slender wheatgrass, silver sagebrush, and cottonwoods. As the range condition deteriorates, silver sagebrush, rubber rabbitbrush, and snowberry increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 2,300 pounds of air-dry vegetation in normal years. Production ranges from 3,000 pounds in favorable years to 1,600 pounds in unfavorable years. Grazing should be delayed until the soils have drained sufficiently and is firm enough to withstand trampling by livestock. Loss of the surface layer results in a severe decrease in productivity and in the potential of the Rivra soils to produce plants suitable for grazing. The Rivra soils are poorly suited to livestock watering ponds because of the seepage potential.

This unit is a probable source of sand or gravel. The hazard of wind erosion and the thin layer of topsoil available for reclamation are concerns that should be addressed. Topsoil can be stockpiled and used to reclaim areas disturbed during excavation.

If this unit is used for homesite and urban development, the main limitations are the hazard of flooding, wetness in dwellings with basements, and the hazard of septic systems contaminating groundwater. Topsoil can be stockpiled and used to reclaim areas disturbed during construction. Excavation for houses and access roads can expose material that is highly susceptible to soil blowing. Revegetating disturbed areas around construction sites as soon as possible helps to control wind erosion. If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

This map unit is in capability subclass VIs, nonirrigated.

The Rivra soils are in the Lowland, 10 to 14 inch ppt., Northern Plains range site. Inclusions of soils with clayey surface layers overlying sand and gravel are in the Subirrigated, 10 to 14 inch ppt., Northern Plains range site. Inclusions of frequently flooded soils are in the Wetland, 10 to 14 inch ppt., Northern Plains range site.

252—Rivra-Urban land complex, 0 to 6 percent slopes

This map unit is on flood plains of the North Platte River and its major tributaries. Natural relief is commonly hummocky. The native vegetation is mainly grasses, shrubs, and deciduous trees. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

This unit is 45 percent Rivra sandy loam and 40 percent Urban land.

Included in this unit are small areas of soils with a clayey surface layer overlying sand and gravel in depressions, low lying areas which frequently flood, and in areas where soils have been removed or filled. Included areas make up 15 percent of the total acreage.

The Rivra soils are very deep and moderately well drained. They formed in alluvium derived from various sources. The surface layer is typically light brownish gray sandy loam 8 inches thick. The underlying material, to a depth of 60 inches or more, is very pale brown very gravelly sand. In some areas the surface is fine sandy loam.

Permeability of the Rivra soils is very rapid. Available water capacity is very low. The effective rooting depth is 60 inches or more for plants that can tolerate a water table, but it is 36 to 60 inches for plants that cannot. A seasonal high water table is at a depth of 3 to 5 feet from April through June. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe. Although somewhat protected from flooding by major water-control structures, these soils are subject to a rare hazard of flooding. Areas of channeling and deposition are common along stream banks.

Urban land is land that is covered by streets, parking lots, buildings, and other structures of urban areas.

This unit is used mainly for homesite and urban development.

The main limitations of the Rivra soils for homesite and urban development are the hazard of flooding, wetness in dwellings with basements, and the hazard of septic systems contaminating groundwater. Topsoil can be stockpiled and used to reclaim areas disturbed during construction. Excavation for houses and access roads in places can expose material that is highly susceptible to wind erosion. Revegetating disturbed areas around construction sites as soon as possible helps to control wind erosion. If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of water supplies as a result of seepage from onsite sewage disposal systems.

The Rivra soils are in capability subclass VIs, nonirrigated.

253—Rock outcrop

Rock outcrop is strongly sloping to very steep hard barren rock exposed on ridges, ledges, and escarpments. Commonly, it is fractured sandstone or limestone.

Included in this unit are small areas of shallow to deep soils which occur in rock fractures and narrow deep gullies and which support sparse vegetation. Also included are small areas of Rubble land below ledges and escarpments. Included areas make up 15 percent of the total acreage.

This unit is used for shelter by livestock and wildlife.

This map unit is in capability class VIII.

254—Rock outcrop-Birdsley complex, 30 to 60 percent slopes

This map unit is on ridges, hills, and escarpments. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,500 to 6,500 feet. The annual precipitation is 7 to 9 inches, the annual air temperature is 44 to 48 degrees F, and the frost-free period is 110 to 130 days.

This unit is 40 percent Rock outcrop and 35 percent Birdsley loam. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Oceanet sandy loam on shoulders, 10 percent Persayo loam on hillsides, and 5 percent Typic Torrifluvents in the bottoms of draws.

Rock outcrop consists dominantly of exposures of sodic shale, but in some areas may be exposures of sandstone.

The Birdsley soils are shallow and well drained. They formed in residuum derived dominantly from sodic shale. The surface layer is typically light brownish gray, strongly alkaline loam 2 inches thick. The underlying material is pale olive, very strongly alkaline loam 15 inches thick. Soft sodic shale is at a depth of 17 inches.

Permeability of the Birdsley soils is very slow. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Birdsley soils is mainly gardner saltbush, Indian ricegrass, bottlebrush squirreltail, and western wheatgrass. As the range condition deteriorates, birdfoot sagebrush increases. As the range condition further deteriorates, halogeton and annual forbs invade. The potential plant community produces about 300 pounds of air-dry vegetation in normal years. Production ranges from 400 pounds in favorable years to 200 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the alkalinity, available water capacity, and the depth of the soils. The slope limits access by livestock and results in overgrazing of the less sloping areas. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Rock outcrop is in capability class VIII and the Birdsley soils are in capability subclass VIIe, nonirrigated.

The Birdsley soils are in the Saline Upland, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Oceanet soils are in the Shallow Sandy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Persayo soils are in the Shallow Loamy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Typic Torrifluvents are in the Saline Lowland, 5 to 9 inch ppt., Wind River Basin range site.

255—Rock outcrop-Cathedral complex, 10 to 50 percent slopes

This map unit is on large knolls. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,100 to 6,600 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 42 to 44 degrees F, and the frost-free period is 90 to 110 days.

This unit is 50 percent Rock outcrop and 40 percent Cathedral gravelly sandy loam. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit is 10 percent Pesmore very gravelly sandy loam in colluvial pockets.

Rock outcrop consists of exposures of granite.

The Cathedral soils are shallow and somewhat excessively drained. They formed in residuum derived dominantly from granite. The upper part of the surface layer is typically dark grayish brown gravelly sandy loam 3 inches thick. The lower 3 inches is dark brown very gravelly sandy loam. The underlying material is brown very gravelly sandy loam 5 inches thick. Hard granite is at a depth of 11 inches.

Permeability of the Cathedral soils is rapid. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Cathedral soils is mainly bluebunch wheatgrass, bottlebrush squirreltail, western wheatgrass, and black sagebrush. As the range condition deteriorates, black sagebrush and threadleaf sedge increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 450 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 250 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Rock outcrop is in capability class VIII and the Cathedral soils are in capability subclass VIIs, nonirrigated.

The Cathedral soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Pesmore soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

256—Rock outcrop-Ustic Torriorthents, shallow-Rubble land complex, 30 to 100 percent slopes

This map unit is on escarpments, hogbacks, and canyon sides. The native vegetation is mainly grasses, shrubs, and trees. Elevation is 5,300 to 7,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 37 to 49 degrees F, and the frost-free period is 90 to 130 days.

This unit is 40 percent Rock outcrop; 25 percent Ustic Torriorthents, shallow; and 15 percent Rubble land. Rock outcrop and Ustic Torriorthents are intermingled on slopes of 30 to 100 percent. Rubble land is on lower colluvial slopes.

Included in this unit are 5 percent moderately deep or deep soils in pockets associated with Rubble land and 15 percent soils underlain by hard bedrock similar to Ustic Torriorthents, shallow.

Rock outcrop consists of ledges and escarpments of exposed sedimentary rock.

The Ustic Torriorthents are very shallow or shallow and are well drained or somewhat excessively drained. They formed in residuum or colluvium derived dominantly from sedimentary rock. The properties of these soils vary considerably from area to area and within an area. The surface layer is sandy loam, loam, clay loam, or clay with 0 to 60 percent rock fragments. It is 1 to 3 inches thick. The underlying material is sandy loam, loam, clay loam, or clay with 0 to 60 percent rock fragments. The depth to interbedded siltstone and shale ranges from 4 to 20 inches. Most uses are severely limited by the slope and the depth to bedrock.

Permeability of the Ustic Torriorthents is slow through moderately rapid. Available water capacity is very low. The effective rooting depth is 4 to 20 inches. Runoff is rapid and the hazard of water erosion is severe.

Rubble land typically consists of areas where colluvial boulders and stones have accumulated below sandstone ledges and escarpments. The voids between the boulders and stones are virtually free of soil material. These areas support no vegetation.

This unit is used mainly for wildlife habitat. Some of the lesser sloping areas of the Ustic Torriorthents are used for livestock grazing.

Production of vegetation suitable for livestock grazing on the Ustic Torriorthents is limited by the available water capacity and restricted rooting depth of the soils. Access by livestock is restricted by adjacent areas of escarpments of Rock outcrop and very steep slopes. The amount of land in this unit accessible to livestock is very small.

Rock outcrop and Rubble land are in capability class VIII, nonirrigated. The Ustic Torriorthents are in capability subclass VIIe, nonirrigated.

257—Rock River sandy loam, 0 to 5 percent slopes

These very deep, well drained soils are on terraces and alluvial fans. They formed in alluvium derived from various sources. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 90 to 100 days.

The surface layer is typically brown sandy loam 2 inches thick. The upper 12 inches of the subsoil is yellowish brown sandy clay loam. The next 8 inches is yellowish brown sandy loam. The next part, to a depth of 35 inches, is light yellowish brown sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown sandy loam. In some areas the surface layer is loamy sand.

Included in this unit are small areas of Alcova sandy loam and Ryan Park loamy sand intermixed with the Rock River soils. Also included are Brownsto sandy loam and Rawlins sandy loam soils on hill crests and terrace breaks. Included areas make up 15 percent of the total acreage.

Permeability of the Rock River soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly needleandthread, thickspike wheatgrass, Indian ricegrass, threadleaf sedge, and big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. This unit is poorly suited to livestock watering ponds because of the seepage potential.

This map unit is in capability subclass IVe, nonirrigated. The Rock River soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Alcova soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Brownsto and Rawlins soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Ryan Park soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

258—Rock River-Hawkstone sandy loams, 3 to 15 percent slopes

This map unit is on hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 6,500 feet. The annual precipitation is 10 to 12 inches, the annual air temperature is 40 to 42 degrees F, and the frost-free period is 90 to 110 days.

This unit is 50 percent Rock River sandy loam and 40 percent Hawkstone sandy loam. The Rock River soils are on back slopes and foot slopes with 3 to 15 percent slopes and the Hawkstone soils are on back slopes with 8 to 15 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Blackhall sandy loam, Brownsto gravelly loam, and Rawlins sandy loam on hill crests. Also included is Zeomont loamy sand on stable dunes. Included areas make up 10 percent of the total acreage.

The Rock River soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from sandstone. The surface layer is typically pale brown sandy loam 2 inches thick. The upper 11 inches of the subsoil is yellowish brown sandy clay loam. The next 7 inches is brown sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is light yellowish brown sandy loam.

Permeability of the Rock River soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Hawkstone soils are very deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone. The surface layer is typically brown sandy loam 1 inch thick. The upper 14 inches of the subsoil is brown sandy loam. The lower 18 inches of the subsoil is light brown sandy loam. The upper 9 inches of the substratum is light brown sandy loam. The lower part, to a depth of 60 inches or more, is pink sandy loam.

Permeability of the Hawkstone soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly needleandthread, thickspike wheatgrass, Indian ricegrass, threadleaf sedge, and silver sagebrush. As the range condition deteriorates, silver sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. This unit is poorly suited to livestock watering ponds because of the seepage potential.

This map unit is in capability subclass IVe, nonirrigated.

The Rock River and Hawkstone soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Blackhall, Brownsto, and Rawlins soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Zeomont soils are in the Sands, 10 to 14 inch ppt., High Plains Southeast range site.

259—Rock River-Pinelli-Blazon complex, 3 to 20 percent slopes

This map unit is on hills and adjacent alluvial fans. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,200 to 7,100 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 39 to 43 degrees F, and the frost-free period is 100 to 110 days.

This unit is 30 percent Rock River sandy loam, 25 percent Pinelli loam, and 20 percent Blazon loam. The Rock River soils are on alluvial fans and foot slopes with 6 to 10 percent slopes, the Pinelli soils are on alluvial fans with 3 to 6 percent slopes, and the Blazon soils are on hill crests and back slopes with 10 to 20 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Cragosen gravelly loam on hill crests, 10 percent Cushool sandy loam on hillsides, and 10 percent Lupinto gravelly loam on hill crests.

The Rock River soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone. The surface layer is typically grayish brown sandy loam 3 inches thick. The upper 19 inches of the subsoil is yellowish brown sandy clay loam. The next 9 inches is light yellowish brown sandy clay loam. The lower part of the subsoil, to a depth of 60 inches or more, is olive yellow sandy loam. In some areas the surface layer is sandy clay loam.

Permeability of the Rock River soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Pinelli soils are very deep and well drained. They formed in alluvium derived from siltstone and shale. The surface layer is typically brown loam 4 inches thick. The upper 12 inches of the subsoil is brown clay loam. The next 8 inches is yellowish brown clay. The next 8 inches is light yellowish brown clay loam. The next layer to a depth of 48 inches is pale yellow clay loam. The lower part of the subsoil, to a depth of 60 inches or more, inches is pale yellow loam. In some areas the surface layer is clay loam.

Permeability of the Pinelli soils is moderately slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

The Blazon soils are shallow and well drained. They formed in residuum and slopewash alluvium derived from sandstone, siltstone, and shale. The surface layer is typically grayish brown loam 3 inches thick. The upper 4 inches of the underlying material is light olive brown clay loam. The lower 8 inches is light brownish gray clay loam. Soft siltstone is at a depth of 15 inches. In some areas 20 to 30 percent of the surface is covered with gravel and cobbles.

Permeability of the Blazon soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Rock River and the Pinelli soils is mainly western wheatgrass, bluebunch wheatgrass, needleandthread, mutton bluegrass, green needlegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. The Rock River and Pinelli soils are only moderately well suited to livestock watering ponds because of the seepage potential.

The potential plant community on the Blazon soils is mainly bluebunch wheatgrass, western wheatgrass, needleandthread, mutton bluegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years.

Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and the depth of the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Rock River and Pinelli soils are in capability subclass IVe, nonirrigated. The Blazon soils are in capability subclass VIIe, nonirrigated.

The Rock River and Pinelli soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Blazon soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Cragosen and Lupinto soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Cushool soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

260—Rock River-Rawlins-Brownsto complex, 3 to 20 percent slopes

This map unit is on hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,400 to 6,700 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 90 to 100 days.

This unit is 40 percent Rock River sandy loam, 30 percent Rawlins gravelly sandy loam, and 15 percent Brownsto gravelly sandy loam. The Rock River soils are on foot slopes with 3 to 15 percent slopes, the Rawlins soils are on back slopes and foot slopes with 10 to 20 percent slopes, and the Brownsto soils are on shoulders and crests with 3 to 20 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Blackhall sandy loam and Bosler gravelly sandy loam on crests, Ryan Park loamy sand on foot slopes, and very gravelly sandy soils on hillsides. Included areas make up 15 percent of the total acreage.

The Rock River soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically grayish brown sandy loam 5 inches thick. The upper 13 inches of the subsoil is brown sandy clay loam. The next 8 inches is pale brown sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown gravelly sandy loam.

Permeability of the Rock River soils is moderate. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Rawlins soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically grayish brown gravelly sandy loam 3 inches thick. The upper part of the subsoil is brown sandy clay loam 6 inches thick. The next 9 inches is pale brown gravelly sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown gravelly sandy loam. In some areas the surface layer is sandy loam.

Permeability of the Rawlins soils is moderate. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The Brownsto soils are very deep and somewhat excessively drained. They formed in alluvium derived from various sources. The surface layer is typically brown gravelly sandy loam 4 inches thick. The upper 4 inches of the subsoil is pale brown gravelly sandy loam. The next 6 inches is very pale brown gravelly sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown very gravelly sandy loam. In some areas 50 to 75 percent of the surface is covered by gravel or cobbles.

Permeability of the Brownsto soils is moderately rapid. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Rock River soils is mainly needleandthread, thickspike wheatgrass, Indian ricegrass, threadleaf sedge, and silver sagebrush. As the range condition deteriorates, silver sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Rawlins and Brownsto soils is mainly needleandthread, bluebunch wheatgrass, Indian ricegrass, threadleaf sedge, mutton bluegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge increases. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils.

This unit is poorly suited to livestock watering ponds because of the seepage potential and the slope.

The Rock River soils are in capability subclass IVe, nonirrigated, and the Rawlins and Brownsto soils are in capability subclass VIe, nonirrigated.

The Rock River soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. The Rawlins and Brownsto soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Blackhall, Bosler, and very gravelly sand soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Ryan Park soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

261—Rock River-Ryan Park-McFadden complex, 5 to 30 percent slopes

This map unit is on foot slopes dissected by numerous draws. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 6,500 feet. The annual precipitation is 10 to 12 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

This unit is 50 percent Rock River loamy sand, 20 percent Ryan Park sandy loam, and 20 percent McFadden sandy loam. The Rock River and Ryan Park soils are on foot slopes with 5 to 20 percent slopes, and the McFadden soils are on side slopes of draws with slopes of 15 to 30 percent. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Alcova sandy loam on the upper portion of foot slopes; and Blackhall sandy loam, Brownsto gravelly loam, and Worfman sandy loam on ridge crests. Included areas make up 10 percent of the total acreage.

The Rock River soils are very deep and well drained. They formed in alluvium derived from sandstone. The surface layer is typically grayish brown loamy sand 3 inches thick. The upper 12 inches of the subsoil is brown sandy clay loam. The next 8 inches is brown sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is light gray sandy loam. In some areas the surface layer is sandy loam.

Permeability of the Rock River soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The Ryan Park soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone. The surface layer is typically brown sandy loam 4 inches thick. The upper part of the subsoil is brown sandy loam 16 inches thick. The next 4 inches is pale brown sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown sandy loam. In some areas the surface layer is loamy sand.

Permeability of the Ryan Park soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The McFadden soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone. The surface layer is typically pale brown sandy loam 3 inches thick. The upper 25 inches of the subsoil is very pale brown sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is light gray sandy loam. In some areas the surface layer is loamy sand.

Permeability of the McFadden soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Rock River and Ryan Park soils is mainly needleandthread, thickspike wheatgrass, Indian ricegrass, threadleaf sedge, and silver sagebrush. As the range condition deteriorates, silver sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the McFadden soils is mainly needleandthread, bluebunch wheatgrass, Indian ricegrass, threadleaf sedge, mutton bluegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge increases. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils.

This unit is poorly suited to livestock watering ponds because of the seepage potential and the slope.

The Rock River and Ryan Park soils are in capability subclass IVe, nonirrigated. The McFadden soils are in capability subclass VIe, nonirrigated.

The Rock River and Ryan Park soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. The McFadden soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Alcova soils are in the Sandy, 10 to 14 inch ppt., High

Plains Southeast range site. Inclusions of Blackhall, Brownsto, and Worfman soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

262—Rock River-Worfman sandy loams, 2 to 15 percent slopes

This map unit is on hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,900 to 6,800 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 100 to 110 days.

This unit is 55 percent Rock River sandy loam and 25 percent Worfman sandy loam. The Rock River soils are on back slopes and foot slopes with 2 to 15 percent slopes, and the Worfman soils are on hill crests with 6 to 15 percent slopes.

Included in this unit are Cushool sandy loam on back slopes and Ryan Park loamy sand on back slopes and foot slopes. Also included are small areas of Rock outcrop on hill crests. Included areas make up 20 percent of the total acreage.

The Rock River soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from sandstone. The surface layer is typically pale brown sandy loam 4 inches thick. The upper part of the subsoil is brown sandy clay loam 14 inches thick. The next 12 inches is pale brown sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown sandy loam.

Permeability of the Rock River soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Worfman soils are shallow and well drained. They formed in residuum and slopewash alluvium derived dominantly from sandstone. The surface layer is typically grayish brown sandy loam 2 inches thick. The upper part of the subsoil is brown sandy clay loam 5 inches thick. The lower part of the subsoil is pale brown sandy clay loam 5 inches thick. Soft sandstone is at a depth of 12 inches. In some areas the surface is covered by channers.

Permeability of the Worfman soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Rock River soils is mainly needleandthread, thickspike wheatgrass, threadleaf sedge, Indian ricegrass, and silver sagebrush. As the range condition deteriorates, silver sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. The Rock River soils are poorly suited to livestock watering ponds because of the seepage potential and the slope.

The potential plant community on the Worfman soils is mainly bluebunch wheatgrass, western wheatgrass, Indian ricegrass, threadleaf sedge, mutton bluegrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge increases. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and the depth of the soils. The Worfman soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Rock River soils are in capability subclass IVe, nonirrigated. The Worfman soils are in capability subclass VIIs, nonirrigated.

The Rock River soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. The Worfman soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains South range site. Inclusions of Cushool soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Ryan Park soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

263—Rock River-Ryan Park-Hawkstone association, undulating

This map unit is on hills. The slope is 2 to 10 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 6,500 feet. The annual precipitation is 10 to 12 inches, the annual air temperature is 40 to 42 degrees F, and the frost-free period is 90 to 110 days.

This unit is 50 percent Rock River sandy loam, 20 percent Ryan Park loamy sand, and 15 percent Hawkstone sandy loam. The Rock River soils are on foot slopes with 2 to 8 percent slopes, the Ryan Park soils are on back slopes and foot slopes with 4 to 10 percent slopes, and the Hawkstone soils are on leeward hillsides with 2 to 10 percent slopes.

Included in this unit are small areas of Brownsto gravelly sandy loam on moderately steep breaks, Rawlins sandy loam on hillsides, and Zeomont loamy sand on stable dunes. Included areas make up 15 percent of the total acreage.

The Rock River soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone. The surface layer is typically brown sandy loam 3 inches thick. The upper part of the subsoil is yellowish brown sandy clay loam 12 inches thick. The next 17 inches is light yellowish brown sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown sandy loam. In some areas the surface layer is loamy sand.

Permeability of the Rock River soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Ryan Park soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone. The surface layer is typically yellowish brown loamy sand 4 inches thick. The upper 12 inches of the subsoil is yellowish brown sandy loam. The next 8 inches is light yellowish brown sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is very pale brown gravelly sandy loam. In some areas the surface layer is sandy loam.

Permeability of the Ryan Park soils is moderately rapid. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Hawkstone soils are very deep and well drained. They formed in eolian deposits derived dominantly from sandstone. The surface layer is typically pale brown sandy loam 3 inches thick. The subsoil is yellowish brown sandy loam 30 inches thick. The upper 15 inches of the substratum is very pale brown sandy loam. The lower part, to a depth of 60 inches or more, is very pale brown loamy sand.

Permeability of the Hawkstone soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly needleandthread, thickspike wheatgrass, Indian ricegrass, threadleaf sedge, and silver sagebrush. As the range condition deteriorates, silver sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. This unit is poorly suited to livestock watering ponds because of the seepage potential.

This map unit is in capability subclass IVe, nonirrigated.

The Rock River, Ryan Park, and Hawkstone soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Brownsto and Rawlins soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Zeomont soils are in the Sands, 10 to 14 inch ppt., High Plains Southeast range site.

264—Roughlock loam, 0 to 6 percent slopes

These very deep, well drained soils are on toe slopes and alluvial fans. They formed in alluvium derived dominantly from siltstone. The native vegetation is mainly grasses and shrubs. Elevation is 5,400 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

The surface layer is typically reddish brown loam 3 inches thick. The upper 29 inches of the subsoil is yellowish red silt loam, yellowish red loam, and red silt loam; it contains a high amount of calcium carbonate. The lower part of the subsoil, to a depth of 60 inches or more, is red, moderate saline silt loam containing a few seams and filaments of gypsum.

Included in this unit are small areas of Buffcreek gravelly loam soils and shallow, very gravelly sandy loam soils on knolls and hill crests. Also included are small areas of Rock outcrop on hill crests. Included areas make up 10 percent of the total acreage.

Permeability of Roughlock soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, needleandthread, blue grama, green needlegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, pricklypear, cheatgrass, and broom snakeweed invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. Proper management of livestock grazing helps to protect the soils from excessive erosion. These soils are only moderately well suited to livestock watering ponds because of the seepage potential.

This map unit is in capability subclass IVe, nonirrigated.

The Roughlock soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of shallow, very gravelly sandy loam and Buffcreek soils are in the Shallow Loamy, 10 to 14 inch ppt., Northern Plains range site.

265—Roughlock-Redbow-Redspear loams, 3 to 15 percent slopes

This map unit is on dip slopes. The native vegetation is mainly grasses and shrubs. Elevation is 5,500 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 120 days.

This unit is 35 percent Roughlock loam, 25 percent Redbow loam, and 20 percent Redspear loam. The Roughlock and Redbow soils are on concave slopes of 3 to 8 percent, and the Redspear soils are on planar and convex slopes of 3 to 15 percent.

Included in this unit are 10 percent Redarrow loam and 10 percent Rock outcrop on knolls and ridge crests.

The Roughlock soils are deep and well drained. They formed in slopewash alluvium derived dominantly from red siltstone. The surface layer is typically yellowish red loam 2 inches thick. The upper 3 inches of the subsoil is yellowish red loam. The next 24 inches is reddish yellow silt loam containing a high amount of calcium carbonate. The lower 18 inches of the subsoil is yellowish red silt loam containing a high amount of calcium carbonate. Hard red siltstone is at a depth of 47 inches. In some areas the surface layer is loam.

Permeability of the Roughlock soils is moderate. Available water capacity is high. The effective rooting depth is 40 to 60 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Redbow soils are moderately deep and well drained. They formed in slopewash alluvium derived dominantly from red siltstone. The surface layer is typically yellowish red loam 3 inches thick. The upper 8 inches of the subsoil is yellowish red loam. The lower 15 inches of the subsoil is yellowish red loam and contains a high amount of calcium carbonate. Hard siltstone is at a depth of 26 inches.

Permeability of the Redbow soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Redspear soils are shallow and well drained. They formed in residuum derived dominantly from red siltstone. The surface layer is typically reddish brown loam 2 inches thick. The subsoil is yellowish red loam 13 inches thick. Hard red siltstone is at a depth of 15 inches. In some areas the surface layer is loam.

Permeability of the Redspear soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Roughlock and Redbow soils is mainly western wheatgrass, needleandthread, green needlegrass, blue grama, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, pricklypear, cheatgrass, and broom snakeweed invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Redspear soils is mainly bluebunch wheatgrass, western wheatgrass, needleandthread, threadleaf sedge, and black sagebrush. As the range condition deteriorates, blue grama and threadleaf sedge increase in abundance. As the range condition further deteriorates, broom snakeweed and pricklypear invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 450 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and by the depth of the soils.

Proper management of livestock grazing helps to protect the unit from excessive erosion. This unit is poorly suited to livestock watering ponds because of the depth to bedrock.

The Roughlock and Redbow soils are in capability subclass IVe, nonirrigated. The Redspear soils are in capability subclass VIe, nonirrigated.

The Roughlock and Redbow soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site. The Redspear soils are in the Shallow Loamy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Redarrow soils in this unit are in the Shallow Loamy, 10 to 14 inch ppt., Northern Plains range site.

266—Roughlock-Buffcreek association, undulating

This map unit is on alluvial fans and fan terraces. The slope is 0 to 6 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,400 to 6,500 feet. The annual precipitation is 10 to 14 inches, the

annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 65 percent Roughlock loam and 25 percent Buffcreek gravelly loam. The Roughlock soils are on concave and planar slopes of 0 to 6 percent, and the Buffcreek soils are on convex slopes of 2 to 6 percent.

Included in this unit is 10 percent very stony soils.

The Roughlock soils are very deep and well drained. They formed in alluvium derived dominantly from red siltstone. The surface layer is typically reddish brown loam 5 inches thick. The upper part of the subsoil is reddish brown loam 10 inches thick. The lower part of the subsoil, to a depth of 60 inches or more, is light reddish brown loam containing a high amount of calcium carbonate.

Permeability of the Roughlock soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

The Buffcreek soils are very deep and well drained. They formed in alluvium derived from various sources. 35 percent of the surface is typically covered with gravel and cobbles. The surface layer is brown gravelly loam 2 inches thick. The upper part of the subsoil is light brown very gravelly loam 4 inches thick. The next 9 inches is pink very gravelly loam. The lower part of the subsoil, to a depth of 60 inches or more, is light reddish brown very gravelly loam.

Permeability of the Buffcreek soils is moderate. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is slight.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Roughlock soils is mainly western wheatgrass, needleandthread, blue grama, green needlegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, pricklypear, cheatgrass, and broom snakeweed invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. Proper management of livestock grazing helps to protect the soils from excessive erosion.

The potential plant community on the Buffcreek soils is mainly bluebunch wheatgrass, western wheatgrass, needleandthread, threadleaf sedge, and black sagebrush. As the range condition deteriorates, blue grama and threadleaf sedge increase in abundance. As the range condition further deteriorates, broom snakeweed and pricklypear invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 450 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils.

This unit is only moderately well suited to livestock watering ponds because of the seepage potential and the slope.

The Roughlock soils are in capability subclass IVe, nonirrigated. The Buffcreek soils are in capability subclass VIs, nonirrigated.

The Roughlock soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site. The Buffcreek soils are in the Shallow Loamy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of very stony soils are in the Shallow Loamy, 10 to 14 inch ppt., Northern Plains range site.

267—Rubble land-Ustic Torriorthents, bouldery, complex, 20 to 60 percent slopes

This map unit is on hillsides. The native vegetation is mainly grasses, forbs, shrubs, and conifers. Elevation is 6,000 to 6,700 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 41 to 43 degrees F, and the frost-free period is 90 to 110 days.

This unit is 50 percent Rubble land and 30 percent Ustic Torriorthents, bouldery. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Bosler sandy loam and 10 percent Chincap fine sandy loam on narrow benches; and 5 percent Rock outcrop on escarpments and hill crests.

Rubble land consists of areas where more than 90 percent of the surface is covered by boulders and stones. These areas support little or no vegetation.

The Ustic Torriorthents range from shallow to very deep and are well drained. They formed in colluvium derived from conglomerate, sandstone, and shale. The properties of these soils vary considerably from area to area, as well as within an area. The surface is commonly covered by 10 to 60 percent boulders and stones. The surface layer is sandy loam, loam, or clay loam containing 30 to 80 percent cobbles, stones, and boulders. It is 2 to 4 inches thick. The underlying material is sandy loam, loam, or clay loam containing 30 to 80 percent cobbles, stones, and boulders. The depth to conglomerate, sandstone, or shale ranges from 10 to more than 60 inches. Most uses are limited by the slope and the content of large rock fragments.

Permeability of the Ustic Torriorthents varies from moderately slow through moderately rapid. Available water capacity is low. Effective rooting depth ranges from 10 to 60 inches or more. Runoff is rapid and the hazard of water erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Ustic Torriorthents is mainly bluebunch wheatgrass, needleandthread, thickspike wheatgrass, bottlebrush squirreltail, and juniper. As the range condition deteriorates, juniper and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,000 pounds of air-dry vegetation in normal years. Production ranges from 1,300 pounds in favorable years to 800 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited mainly by the available water capacity and the content of large rock fragments in the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas.

The Rubble land is in capability class VIII and Ustic Torriorthents are in capability subclass VIIe.

The Ustic Torriorthents are in the Shallow Breaks, 10 to 14 inch ppt., High Plains South range site. Inclusions of Bosler and Chincap soils are in the Loamy, 10 to 14 inch ppt., High Plans Southeast range site.

268—Ryan Park loamy sand, 2 to 10 percent slopes

These very deep, well drained soils are on terraces, foot slopes, and alluvial fans. They formed in alluvium derived dominantly from sandstone. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,900 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 42 to 45 degrees F, and the frost-free period is 100 to 110 days.

The surface layer is typically light brownish gray loamy sand 5 inches thick. The upper part of the subsoil is yellowish brown sandy loam 12 inches thick. The next 9 inches is pale brown gravelly loamy sand. The lower part of the subsoil, to a depth of 60 inches or more, is light gray gravelly loamy sand.

Included in this unit are 10 percent Alcova fine sandy loam intermixed with the Ryan Park soils and 10 percent Zeomont loamy sand on gently sloping stable dunes.

Permeability of the Ryan Park soils is moderately rapid. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, threadleaf sedge, and silver sagebrush. As the range condition deteriorates, silver sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. This unit is poorly suited to livestock watering ponds because of the seepage potential.

This map unit is in capability subclass IVe, nonirrigated.

The Ryan Park soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Alcova soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Zeomont soils are in the Sands, 10 to 14 inch ppt., High Plains Southeast range site.

269—Ryan Park-Elk Mountain sandy loams, 3 to 15 percent slopes

This map unit is on uplands. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,500 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 100 to 110 days.

This unit is 50 percent Ryan Park sandy loam and 30 percent Elk Mountain sandy loam. The Ryan Park soils are on foot slopes and alluvial fans with 3 to 10 percent slopes and the Elk Mountain soils are on hillsides with 6 to 15 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Blackhall sandy loam on hill crests, 5 percent Diamondville loam on foot slopes, and 5 percent Forelle loam in swales.

The Ryan Park soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from sandstone. The surface layer is typically grayish brown sandy loam 2 inches thick. The upper 11 inches of the subsoil is brown sandy loam. The next 4 inches is pale brown sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is light yellowish brown sandy loam. In some areas the surface layer is loamy sand.

Permeability of the Ryan Park soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

The Elk Mountain soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone. The surface layer is typically light brownish gray sandy loam 2 inches thick. The upper 7 inches of the subsoil is yellowish brown sandy loam. The next 7 inches is light yellowish brown sandy loam. The lower part of the subsoil is pale brown sandy loam 7 inches thick. Soft sandstone is at a depth of 23 inches. In some areas the surface layer is loamy sand.

Permeability of the Elk Mountain soils is moderately rapid. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly needleandthread, thickspike wheatgrass, Indian ricegrass, threadleaf sedge, and silver sagebrush. As the range condition deteriorates, silver sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. This unit is poorly suited to livestock watering ponds because of the seepage potential of both soils and the depth to bedrock of the Elk Mountain soils.

This map unit is in capability subclass IVe, nonirrigated.

The Ryan Park and Elk Mountain soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Blackhall soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Diamondville and Forelle soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

270—Saddle-Griffy association, rolling

This map unit is on hills. The slope is 3 to 15 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,500 to 6,500 feet. The annual precipitation is 5 to 9 inches, the annual air temperature is 44 to 46 degrees F, and the frost-free period is 110 to 130 days.

This unit is 45 percent Saddle sandy loam on hill crests and hillsides with 6 to 15 percent slopes, and 40 percent Griffy fine sandy loam on foot slopes with 3 to 6 percent slopes.

Included in this unit are small areas of Enos loamy sand on hill crests and Wallson loamy fine sand on foot slopes. Also included are a few small areas of Persayo loam on knobs and hill crests. Included areas make up 15 percent of the total acreage.

The Saddle soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone and sandy shale. The surface layer is typically pale brown sandy loam 3 inches thick. The upper 11 inches of the subsoil is pale brown and light yellowish brown sandy clay loam. The next 4 inches is light yellowish brown sandy loam. The lower part of the subsoil is very pale brown sandy loam 12 inches thick. Soft sandstone is at a depth of 30 inches.

Permeability of the Saddle soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Griffy soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone and sandy shale. The surface layer is typically pale brown fine sandy loam 3 inches thick. The upper 13 inches of the subsoil is yellowish brown sandy clay loam. The next 5 inches is light yellowish brown sandy clay loam. The lower part of the subsoil, to a depth of 60 inches or more, is pale brown sandy loam.

Permeability of the Griffy soils is moderate. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, needleandthread, Indian ricegrass, bluebunch wheatgrass, and big sagebrush. As the range condition deteriorates, blue grama, Sandberg bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, annuals and pricklypear invade. The potential plant community produces about 400 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the low annual precipitation. This unit is poorly suited to livestock watering ponds because of the seepage potential and the slope of both soils, and the depth to bedrock of the Saddle soils.

This map unit is in capability subclass VIe, nonirrigated.

The Saddle and Griffy soils are in the Loamy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Enos and Wallson soils are in the Sandy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Persayo soils are in the Shallow Loamy, 5 to 9 inch ppt., Wind River Basin range site.

271—Salt flats

Salt flats are areas of poorly drained, fine textured, very strongly saline soils with a salt crust on the surface. The salt crust ranges in thickness from less than 1 inch to 3 inches. These areas support little or no vegetation.

In most areas, salt flats have been caused by seepage from irrigation ditches, over-irrigation, and disruption of natural surface drainage patterns.

This map unit is in capability class VIII.

272—Samday very cobbly clay, 20 to 60 percent slopes

These very shallow or shallow, well drained soils are on ridges and hills. They formed in residuum derived dominantly from shale. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,200 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

The surface layer is typically grayish brown very cobbly clay 2 inches thick. The underlying material is light olive brown clay 10 inches thick. Soft platy shale is at a depth of 12 inches.

Included in this unit are 5 percent Savageton gravelly clay on foot slopes and 5 percent Rock outcrop intermixed with the Samday soils.

Permeability of the Samday soils is slow. Available water capacity is very low. The effective rooting depth is 6 to 20 inches. Runoff is medium to rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for livestock grazing and wildlife habitat. A few areas are used for homesite development.

The potential plant community on this unit is mainly western wheatgrass, green needlegrass, and bluebunch wheatgrass. As the range condition deteriorates, big sagebrush and birdfoot sagebrush increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 750 pounds of air-dry vegetation in normal years. Production ranges from 1,000 pounds in favorable years to 450 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas.

This unit is poorly suited to homesite development. The main limitations are the depth to bedrock, slope, shrink-swell potential, and the permeability. Buildings and roads should be designed to offset the effects of shrinking and swelling. Properly designed building foundations and footings and runoff diverted away from the buildings will help prevent the structural damage caused by shrinking and swelling. Installation of septic tank absorption lines in or on the bedrock is not recommended due to the possibility of inadequate filtration and contamination of ground water supplies. Effluent from septic tank absorption fields can also surface in downslope areas and thus create a hazard to health.

This map unit is in capability subclass, VIIe, nonirrigated.

The Samday soils are in the Shallow Clayey, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Savageton soils are in the Clayey, 10 to 14 inch ppt., Northern Plains range site.

273—Savageton-Samday complex, 3 to 15 percent slopes

This map unit is on hillslopes. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,200 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 55 percent Savageton gravelly clay and 30 percent Samday cobbly silty clay loam. The Savageton soils are on back slopes and areas with a slope of 3 to 8 percent and the Samday soils are in areas with a slope of 6 to 15 percent. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Silhouette clay loam on gently sloping alluvial fans; and 5 percent moderately deep or deep, very gravelly soils on hill crests. Also included is 5 percent Rock outcrop intermixed with the Samday soils and on steep sides of gullies.

The Savageton soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from shale. 25 percent of the surface is typically covered by gravel and cobbles. The surface layer is very pale brown gravelly clay 2 inches thick. The upper part of the subsoil is pale yellow clay 14 inches thick. The lower 10 inches of the subsoil is pale yellow clay containing a few clusters of gypsum crystals. The substratum is pale yellow clay 11 inches thick. Soft platy shale is at a depth of 37 inches.

Permeability of the Savageton soils is slow. Available water capacity is moderate. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Samday soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from shale. 25 percent of the surface is typically covered by gravel and cobbles. The surface layer is light yellowish brown cobbly silty clay loam 2 inches thick. The underlying material is pale yellow silty clay 15 inches thick. Soft platy shale is at a depth of 17 inches.

Permeability of the Samday soils is slow. Available water capacity is very low. The effective rooting depth is 6 to 20 inches. Runoff is rapid and the hazard of water erosion is moderate. The hazard of wind erosion is slight.

Most areas of this unit are used for livestock grazing and wildlife habitat. A few areas are used for homesite development.

The potential plant community on the Savageton soils is mainly western wheatgrass, green needlegrass, and blue grama. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, pricklypear invades. The potential plant community produces about 1,000 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years.

The potential plant community on the Samday soils is mainly western wheatgrass, green needlegrass, and bluebunch wheatgrass. As the range condition deteriorates, big sagebrush and birdfoot sagebrush increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 750 pounds of air-dry vegetation in normal years. Production ranges from 1,000 pounds in favorable years to 450 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and the depth to bedrock of the soils.

This unit is poorly suited to livestock watering ponds because of the depth to bedrock.

If this unit is used for homesite development, the main limitations are the depth to bedrock, shrink-swell potential, and the permeability. Cuts needed to provide essentially level building sites can expose bedrock. Buildings and roads should be designed to offset the effects of shrinking and swelling. Properly designed building foundations and footings and runoff diverted away from the buildings will help to prevent the structural damage caused by shrinking and swelling. Septic tank absorption fields do not function properly because of slow permeability. Installation of septic tank absorption lines in or on the bedrock is not recommended due to the possibility of inadequate filtration and contamination of ground water supplies. Effluent from septic tank absorption fields can surface in downslope areas and thus create a hazard to health.

The Savageton soils are in capability subclass IVe, nonirrigated. The Samday soils are in capability subclass VIIs, nonirrigated.

The Savageton soils are in the Clayey, 10 to 14 inch ppt., Northern Plains range site. The Samday soils are in the Shallow Clayey, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Silhouette soils are in the Clayey, 10 to 14 inch ppt., Northern Plains range site. Inclusions of moderately deep or deep, very gravelly soils are in the Shallow Loamy, 10 to 14 inch ppt., Northern Plains range site.

274—Shingle-Samday complex, 3 to 45 percent slopes

This map unit is on hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,200 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 45 percent Shingle loam and 35 percent Samday clay. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Kishona loam on foot slopes, Theedle clay loam on hillsides, and Rock outcrop on hill crests and escarpments. Also included, in the northeast corner of the survey area, are small areas of Gateridge fine sandy loam on hillsides. Included areas make up 20 percent of the total acreage.

The Shingle soils are shallow and well drained. They formed in residuum and slopewash alluvium derived dominantly from sandy shale. The surface layer is typically light brownish gray loam 3 inches thick. The upper 5 inches of the underlying material is light brownish gray clay loam. The lower 8 inches is light gray clay loam. Soft sandy shale is at a depth of 16 inches. In some areas the surface layer is clay loam or sandy loam.

Permeability of the Shingle soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Samday soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from shale. The surface layer is typically grayish brown clay 3 inches thick. The underlying material is light brownish gray clay 14 inches thick. Soft platy shale is at a depth of 17 inches. In some areas the surface layer is clay loam.

Permeability of the Samday soils is slow. Available water capacity is very low. The effective rooting depth is 6 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Shingle soils is mainly bluebunch wheatgrass, western wheatgrass, mutton bluegrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Samday soils is mainly western wheatgrass, gardner saltbush, Indian ricegrass, inland saltgrass, birdfoot sagebrush, and bottlebrush squirreltail. As the range condition deteriorates, gardner saltbush and Sandberg bluegrass increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 300 pounds of air-dry vegetation in normal years. Production ranges from 400 pounds in favorable years to 200 pounds in unfavorable years.

The production of vegetation suitable for livestock grazing on this unit is limited by the available water capacity and depth of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. Loss of the surface layer results in a severe decrease in productivity and in the potential of the unit to produce plants suitable for grazing. The unit is poorly suited to livestock watering ponds because of the slope and the depth to bedrock.

This map unit is in capability subclass VIIe, nonirrigated.

The Shingle soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Samday soils are in the Shale, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Kishona soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Theedle soils are in the Steep Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

275—Shingle-Taluce-Rock outcrop complex, 10 to 40 percent slopes

This map unit is on escarpments and hills. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,200 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 30 percent Shingle loam, 25 percent Taluce sandy loam, and 20 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Kishona clay loam in colluvial pockets and on foot slopes, Orella silty clay loam on hill crests, Theedle clay loam on hillsides, and Worf sandy loam on hillsides and hill crests. Also included, in the northeast corner of the survey area, are small areas of Gateridge fine sandy loam on hillsides and Taluce Variant fine sandy loam on hill crests. Included areas make up 25 percent of the total acreage.

The Shingle soils are shallow and well drained. They formed in residuum and slopewash alluvium derived dominantly from siltstone and shale. The surface layer is typically pale brown loam 2 inches thick. The upper 4 inches of the underlying material is light brownish gray loam. The lower 7 inches is light olive brown clay loam. Soft siltstone is at a depth of 13 inches. In some areas the surface layer is clay loam.

Permeability of the Shingle soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Taluce soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from sandstone. The surface layer is typically pale brown sandy loam 3 inches thick. The upper 4 inches of the underlying material is brown sandy loam. The lower 5 inches is yellowish brown sandy loam. Soft sandstone is at a depth of 12 inches.

Permeability of the Taluce soils is moderately rapid. Available water capacity is very low. The effective rooting depth is 6 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

Rock outcrop consists of exposures of sandstone, siltstone, and shale.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Shingle soils is mainly bluebunch wheatgrass, western wheatgrass, needleandthread, mutton bluegrass, and sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Taluce soils is mainly bluebunch wheatgrass, Indian ricegrass, needleandthread, threadleaf sedge, and mutton bluegrass. As the range condition deteriorates, threadleaf sedge increases. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years.

The production of vegetation suitable for livestock grazing on this unit is limited by the available water capacity and depth of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. Proper management of livestock grazing helps to protect the unit from excessive erosion. The unit is poorly suited to livestock watering ponds because of the slope and the depth to bedrock.

The Shingle and Taluce soils are in capability subclass VIIe, nonirrigated, and the Rock outcrop is in capability class VIII.

The Shingle soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Taluce soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Kishona and Theedle soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Orella soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Worf soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Taluce Variant soils are in the Shallow Sandy, 15 to 19 inch ppt., Northern Plains range site. In the east-central part of the survey area, the Shingle soils are in the Shallow Loamy, 10 to 14 inch ppt., Northern Plains range site and the Taluce soils are in the Shallow Sandy, 10 to 14 inch ppt., Northern Plains range site.

276—Shingle-Theedle association, rolling

This map unit is on hills. The slope is 6 to 20 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,200 to 6,400 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 40 percent Shingle loam and 35 percent Theedle fine sandy loam. The Shingle soils are on hill crests with 6 to 20 percent slopes and the Theedle soils are on hillsides with 6 to 10 percent slopes.

Included in this unit are 5 percent Cushman loam and 10 percent Kishona clay loam on foot slopes; and 10 percent shallow sodic soils on hill crests.

The Shingle soils are shallow and well drained. They formed in residuum derived dominantly from siltstone and shale. The surface layer is typically grayish brown loam 1 inch thick. The underlying material is light brownish gray loam 10 inches thick. Soft shale is at a depth of 11 inches. In some areas the surface layer is clay loam.

Permeability of the Shingle soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Theedle soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from siltstone and shale. The surface layer is typically pale brown fine sandy loam 1 inch thick. The next layer is brown loam 4 inches thick. The upper 15 inches of the underlying material is pale brown loam. The lower 6 inches is light brownish gray clay loam. Soft siltstone is at a depth of 26 inches. In some areas the surface layer is loam.

Permeability of the Theedle soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Shingle soils is mainly bluebunch wheatgrass, western wheatgrass, mutton bluegrass, needleandthread, Indian ricegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils.

The potential plant community on Theedle soils is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years.

This unit is poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Shingle soils are in capability subclass VIIs, nonirrigated. The Theedle soils are in capability subclass IVe, nonirrigated.

The Shingle soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Theedle soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Cushman and Kishona soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of shallow sodic soils are in the Saline Upland, 10 to 14 inch ppt., High Plains Southeast range site.

277—Silhouette clay loam, 0 to 6 percent slopes

These very deep, well drained soils are on alluvial fans. They formed in alluvium derived dominantly from shale. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 6,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 45 to 49 degrees F, and the frost-free period is 110 to 130 days.

The surface layer is typically grayish brown clay loam 3 inches thick. The upper part of the subsoil is grayish brown clay 8 inches thick. The lower part of the subsoil, to a depth of 60 inches or more, is grayish brown clay.

Included in this unit are 5 percent Petrie clay loam and 5 percent Zigweid loam intermixed with the Silhouette soils. Also included is 5 percent Typic Fluvaquents in drainageways.

Permeability of the Silhouette soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat. A few areas are used for irrigated hay and pasture or for homesite development.

The potential plant community on this unit is mainly green needlegrass, western wheatgrass, and blue grama. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, pricklypear invades. The potential plant community produces about 1,000 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. This unit is only moderately well suited to livestock watering ponds because of the slope.

If this unit is used for irrigated hay and pasture, irrigation water should be applied carefully to avoid the build up of a high water table. Irrigation water should be applied at a rate that ensures optimum production without excessive deep percolation. Applications of irrigation water should be adjusted to the available water capacity and water intake rate of the soils and to the crop needs.

If this unit is used for homesite development, the main limitations are the permeability and the shrink-swell potential. The restricted permeability of the soils increases the possibility of failure of septic tank absorption fields. The effects of shrinking and swelling can be minimized by using proper engineering designs and by backfilling with material that has low shrink-swell potential. If a septic tank absorption field is to be installed in these soils, increasing the size of the field will help to overcome the restricted permeability.

This map unit is in capability subclass IVe, irrigated and nonirrigated.

The Silhouette soils are in the in the Clayey, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Petrie soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Zigweid soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Typic Fluvaquents are in the Subirrigated, 10 to 14 inch ppt., Northern Plains range site.

278—Silhouette-Petrie clay loams, 1 to 6 percent slopes

This map unit is on alluvial fans. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 50 percent Silhouette clay loam and 30 percent Petrie clay loam. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Absted fine sandy loam and 10 percent Zigweid loam.

The Silhouette soils are very deep and well drained. They formed in alluvium derived dominantly from shale. The surface layer is typically grayish brown clay loam 2 inches thick. The upper 11 inches of the subsoil is brown silty clay. The next 10 inches is pale brown silty clay. The lower part of the subsoil, to a depth of 60 inches or more, is pale brown and light yellowish brown clay loam. In some areas the surface layer is clay.

Permeability of the Silhouette soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

The Petrie soils are very deep and well drained. They formed in alluvium derived dominantly from sodic shale. The surface layer is typically pale brown, strongly alkaline clay loam 3 inches thick. The upper 16 inches of the underlying material is light yellowish brown, very strongly alkaline clay loam. The next 12 inches is yellowish brown, strongly alkaline silty clay. The lower part, to a depth of 60 inches or more, is light yellowish brown, very strongly alkaline silty clay. In some areas the surface layer is silty clay.

Permeability of the Petrie soils is very slow. Available water capacity is high. The effective rooting depth is 60 inches or more for plants that can tolerate saline and alkaline soils, but it is 5 to 15 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Silhouette soils is mainly thickspike wheatgrass, green needlegrass, mutton bluegrass, and sagebrush. As the range condition deteriorates, birdfoot sagebrush increases. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,000 pounds of air-dry vegetation in normal years. Production ranges from 1,300 pounds in favorable years to 500 pounds in unfavorable years.

The potential plant community on the Petrie soils is mainly Indian ricegrass, western wheatgrass, bottlebrush squirreltail, gardner saltbush, and birdfoot sagebrush. As the range condition deteriorates, birdfoot sagebrush increases. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 500 pounds of air-dry vegetation in normal years. Production ranges from 700 pounds in favorable years to 350 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity and alkalinity of the soils. Loss of the surface layer results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for grazing.

This unit is only moderately well suited to livestock watering ponds because of the slope.

The Silhouette soils are in capability subclass IVe, nonirrigated. The Petrie soils are in capability subclass VIs, nonirrigated.

The Silhouette soils are in the Clayey, 10 to 14 inch ppt., High Plains Southeast range site. The Petrie soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Absted and Zigweid soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

279—Starley-Rock outcrop complex, 4 to 25 percent slopes

This map unit is on mountain crests and hillsides. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 7,600 to 8,600 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 32 to 35 degrees F, and the frost-free period is less than 80 days. Frost commonly occurs during the summer months.

This unit is 70 percent Starley cobbly loam and 20 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Farlow cobbly loam and very deep, reddish brown loam soils on colluvial slopes; and Woosley loam in swales. Included areas make up 10 percent of the total acreage.

The Starley soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from limestone. The surface layer is typically dark brown and brown cobbly loam 8 inches thick. The upper 5 inches of the subsoil is pale brown very cobbly clay loam. The lower 5 inches of the subsoil is very pale brown very cobbly loam. Hard fractured limestone is at a depth of 18 inches.

Permeability of the Starley soils is moderate. Available water capacity is very low. The effective rooting depth is 7 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

Rock outcrop consists of exposures of limestone on ledges and ridge crests.

This unit is used mainly for summer livestock grazing and wildlife habitat.

The potential plant community on the Starley soils is mainly bluebunch wheatgrass, Columbia needlegrass, and Idaho fescue. As the range condition deteriorates, sagebrush increases. As the range condition further deteriorates, annual forbs, cheatgrass, poverty weed, gumweed, burdock, and stickseed invade. The potential plant community produces about 600 pounds of air-dry vegetation in normal years. Production ranges from 800 pounds in favorable years to 400 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and the depth of the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Starley soils are in capability subclass VIIs, nonirrigated. The Rock outcrop is in capability class VIII.

The Starley soils are in the Very Shallow, 15 to 19 inch ppt., Foothills and Mountains East range site. Inclusions of Farlow, Woosley, and very deep reddish brown loam soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains East range site.

280—Stunner-Pinelli complex, 3 to 15 percent slopes

This map unit is on plateaus. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,300 to 7,400 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 37 to 43 degrees F, and the frost-free period is 90 to 110 days.

This unit is 50 percent Stunner sandy loam and 30 percent Pinelli clay loam. The Stunner soils are on convex slopes of 3 to 15 percent, and the Pinelli soils are on concave slopes of 3 to 10 percent. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 10 percent Brownsto gravelly loam on hill crests and shoulders and 10 percent stony clay soils in nearly level drainageways.

The Stunner soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically grayish brown sandy loam 3 inches thick. The upper 14 inches of the subsoil is brown clay loam. The next 6 inches is yellowish brown clay loam. The lower part of the subsoil is light gray loam to a depth of 60 inches or more. In some areas the surface layer is loam.

Permeability of the Stunner soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Pinelli soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically grayish brown clay loam 3 inches thick. The upper 19 inches of the subsoil is brown silty clay. The next 8 inches is light brownish gray clay loam. The lower part of the subsoil, to a depth of 60 inches or more, is pale brown loam. In some areas the surface layer is loam.

Permeability of the Pinelli soils is moderately slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, bluebunch wheatgrass, needleandthread, mutton bluegrass, green needlegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. The unit is only moderately well suited to livestock watering ponds because of the seepage potential and the slope.

This map unit is in capability subclass IVe, nonirrigated.

The Stunner and Pinelli soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Brownsto and stony clay soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

281—Sunup-Kishona-Rock outcrop complex, 10 to 30 percent slopes

This map unit is on dip slopes dissected by ravines. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,400 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 35 percent Sunup very gravelly loam, 25 percent Kishona loam, and 25 percent Rock outcrop. The Sunup soils are on dip slopes with 10 to 30 percent slopes, the Kishona soils are on foot slopes of ravine sides with 10 to 20 percent slopes, and Rock outcrop is on crests and sides of ravines. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Clarkelen sandy loam and Haverdad loam on nearly level flood plains and in draws, Forkwood loam on gently sloping foot slopes and alluvial fans, and Redarrow and Shingle loams intermixed with the Sunup soils. Included areas make up 15 percent of the total acreage.

The Sunup soils are shallow and well drained. They formed in residuum derived dominantly from sandstone. The surface layer is typically yellowish brown very gravelly loam 4 inches thick. The underlying material is light yellowish brown very gravelly loam 9 inches thick. Hard sandstone is at a depth of 13 inches. In some areas the surface layer is very gravelly sandy clay loam.

Permeability of the Sunup soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Kishona soils are very deep and well drained. It formed in slopewash alluvium derived from sandstone and shale. The surface layer is typically light brownish gray loam 3 inches thick. The upper 6 inches of the underlying material is light brownish gray loam. The lower part, to a depth of 60 inches or more, is pale olive loam. In some areas the surface layer is sandy loam.

Permeability of the Kishona soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

Rock outcrop consists of exposures of hard sandstone and shale.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Sunup soils is mainly bluebunch wheatgrass, bottlebrush squirreltail, western wheatgrass, and black sagebrush. As the range condition deteriorates, black sagebrush and threadleaf sedge increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 450 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 250 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and the depth of the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The potential plant community on the Kishona soils is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, Indian ricegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the slope.

The Sunup soils are in capability subclass VIIs, nonirrigated. The Kishona soils are in capability subclass VIe, nonirrigated, and the Rock outcrop is in capability class VIII.

The Sunup soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site. The Kishona soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Clarkelen and Haverdad soils are in the Loamy Overflow, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Forkwood soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Redarrow and Shingle soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

282—Terro-Vonalee association, rolling

This map unit is on hills. The slope is 3 to 15 percent. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 6,400 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 50 percent Terro loamy sand and 30 percent Vonalee fine sandy loam. The Terro soils are on hill crests and hillsides with 3 to 15 percent slopes and the Vonalee soils are on foot slopes with 3 to 6 percent slopes.

Included in this unit are Bowbac sandy loam on hillsides, Orpha sand on stable dunes, and Taluce loamy sand on hill crests. Also included are small areas of Rock outcrop. Included areas make up 20 percent of the total acreage.

The Terro soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone. The surface layer is typically pale brown loamy sand 3 inches thick. The upper 17 inches of the subsoil is yellowish brown sandy loam. The lower 14 inches of the subsoil is light yellowish brown sandy loam. Soft sandstone is at a depth of 34 inches. In some areas the surface layer is sandy loam.

Permeability of the Terro soils is moderately rapid. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is slow and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Vonalee soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from sandstone. The surface layer is typically pale brown fine sandy loam 2 inches thick. The upper 12 inches of the subsoil is yellowish brown sandy loam. The next 5 inches is light brownish gray sandy loam. The lower part of the subsoil, to a depth of 60 inches or more, is light yellowish brown sandy loam. In some areas the surface layer is loamy sand.

Permeability of the Vonalee soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly needleandthread, thickspike wheatgrass, Indian ricegrass, threadleaf sedge, and silver sagebrush. As the range condition deteriorates, silver sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. This unit is poorly suited to livestock watering ponds because of the seepage potential of both soils and by the depth to bedrock and the slope of the Terro soils.

This map unit is in capability subclass IVe, nonirrigated.

The Terro and Vonalee soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Bowbac soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Orpha soils are in the Sands, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Taluce soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. In the east-central part of the survey area the soils are in the Sandy, 10 to 14 inch ppt., Northern Plains range site.

283—Theedle-Shingle-Kishona complex, 6 to 40 percent slopes, gullied

This map unit is on hills dissected by gullies. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 30 percent Theedle clay loam, 25 percent Shingle loam, and 20 percent Kishona clay loam. The Theedle soils are on hillsides with 10 to 30 percent slopes, the Shingle soils are on hill crests with 6 to 40 percent slopes, and the Kishona soils are on foot slopes with 6 to 20 percent slopes.

Included in this unit are small areas of Cushman loam on hillsides; Forkwood loam on gently sloping alluvial fans; Haverdad loam in drainageways; Samday clay loam on moderately sloping to steep hill crests; soils similar to the Shingle soils but with shallow to hard sandstone bedrock on hill crests; and Gullied land. Included areas make up 25 percent of the total acreage.

The Theedle soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from siltstone, sandstone, and shale. The surface layer is typically light brownish gray clay loam 3 inches thick. The upper 6 inches of the underlying material is light brownish gray clay loam. The lower 18 inches is light gray clay loam. Soft platy shale is at a depth of 27 inches. In some areas the surface layer is sandy loam or loam, or may be 10 to 20 percent covered by gravel.

Permeability of Theedle soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Shingle soils are shallow and well drained. They formed in residuum derived dominantly from siltstone, sandstone, and shale. The surface layer is typically pale brown loam 2 inches thick. The underlying material is light yellowish brown loam 15 inches thick. Soft siltstone is at a depth of 17 inches. In some areas the surface layer is clay loam or may be 10 to 20 percent covered by gravel.

Permeability of the Shingle soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Kishona soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from siltstone, sandstone, and shale. The surface layer is typically grayish brown clay loam 5 inches thick. The upper 13 inches of the underlying material is grayish brown clay loam. The lower part, to a depth of 60 inches or more, is light brownish gray clay loam. In some areas the surface layer is loam or may be 10 to 20 percent covered by gravel.

Permeability of the Kishona soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Theedle soils is mainly western wheatgrass, bluebunch wheatgrass, mutton bluegrass, needleandthread, and big sagebrush. As the range condition deteriorates, sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,100 pounds in favorable years to 400 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The potential plant community on the Shingle soils is mainly bluebunch wheatgrass, western wheatgrass, mutton bluegrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and the depth of the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The potential plant community on the Kishona soils is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, Indian ricegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the slope.

Slopes and gullies limit access by livestock and result in overgrazing of the less sloping and easily accessible areas.

The Theedle and Kishona soils are in capability subclass VIe, nonirrigated. The Shingle soils are in capability subclass VIIe, nonirrigated.

The Theedle soils are in the Steep Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Shingle soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Kishona soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Cushman and Forkwood soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Haverdad soils are in the Loamy

Overflow, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Samday soils are in the Saline Upland, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of soils similar to Shingle soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. In the east-central part of the survey area, the Theedle soils are in the Steep Loamy, 10 to 14 inch ppt., Northern Plains range site; the Shingle soils are in the Shallow Loamy, 10 to 14 inch Northern Plains range site; and the Kishona soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site.

284—Threetop-Sunup-Frontier complex, 3 to 20 percent slopes

This map unit is on dip slopes. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,000 to 6,700 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 47 degrees F, and the frost-free period is 110 to 120 days.

This unit is 35 percent Threetop sandy loam, 30 percent Sunup very gravelly sandy clay loam, and 20 percent Frontier sandy loam. The Threetop soils are on the lower portion of dip slopes with 3 to 12 percent slopes, the Sunup soils are on the upper portion of dip slopes with 6 to 20 percent slopes, and the Frontier soils are on the upper portion of dip slopes with 6 to 15 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Hiland sandy loam on foot slopes, Samday clay loam on ridge crests, and Rock outcrop intermixed with the soils and on ridge crests and escarpments. Included areas make up 15 percent of the total acreage.

The Threetop soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone. The surface layer is typically brown sandy loam 2 inches thick. The upper part of the subsoil is brown sandy clay loam 11 inches thick. The next 5 inches is pale brown sandy clay loam. The lower 6 inches is very pale brown very gravelly sandy loam. Hard argillaceous sandstone is at depth of 24 inches.

Permeability of the Threetop soils is moderate. Available water capacity is very low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Sunup soils are shallow and well drained. They formed in residuum derived dominantly from sandstone. 50 percent of the surface is typically covered with gravel, channers, and cobbles. The surface layer is brown very gravelly sandy clay loam 2 inches thick. The underlying material is pale brown very gravelly sandy clay loam 8 inches thick. Hard sandstone is at a depth of 10 inches. In some areas the surface layer is very gravelly loam.

Permeability of the Sunup soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

The Frontier soils are shallow and well drained. They formed in residuum derived dominantly from sandstone. The surface layer is typically brown sandy loam 4 inches thick. The upper 10 inches of the subsoil is brown sandy clay loam and light brown clay loam. The lower 3 inches is light brown clay loam. Hard sandstone is at a depth of 17 inches.

Permeability of the Frontier soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Threetop soils is mainly western wheatgrass, big sagebrush, needleandthread, bluebunch wheatgrass, Indian ricegrass, and prairie junegrass. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years.

The potential plant community on the Sunup soils is mainly bluebunch wheatgrass, bottlebrush squirreltail, western wheatgrass, and black sagebrush. As the range condition deteriorates, black sagebrush and threadleaf sedge increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 450 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 250 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils.

The potential plant community on the Frontier soils is mainly bluebunch wheatgrass, western wheatgrass, needleandthread, mutton bluegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils.

This unit is poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Threetop soils are in capability subclass IVe, nonirrigated. The Sunup and Frontier soils are in capability subclass VIIs, nonirrigated.

The Threetop soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Sunup soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site. The Frontier soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Hiland soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Samday soils are in the Shale, 10 to 14 inch ppt., High Plains Southeast range site.

285—Tisworth sandy loam, 0 to 5 percent slopes

These very deep, well drained soils are on alluvial fans and terraces. Relief is commonly hummocky. They formed in alluvium derived from sodic shale and sandstone. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,200 to 6,600 feet. The annual precipitation is 10 to 12 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 90 to 100 days.

The surface layer is typically light brownish gray sandy loam 3 inches thick. The upper part of the subsoil is brown and pale brown, very strongly alkaline, moderately saline sandy clay loam 11 inches thick. The next 14 inches is pale brown, very strongly alkaline, moderately saline sandy clay loam. The lower part, to a depth of 60 inches or more, is very pale brown, very strongly alkaline, moderately saline sandy loam. In some areas the surface layer is fine sandy loam.

Included in this unit are Rock River sandy loam intermixed with the Tisworth soils, Typic Fluvaquents on flood plains, and Slickspots in microbasins. Included areas make up 20 percent of the total acreage.

Permeability of the Tisworth soils is slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more for plants that can tolerate saline and alkaline soils, but it is 5 to 15 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe. These soils are subject to a rare hazard of flooding.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly alkali sacaton, basin wildrye, western wheatgrass, and black greasewood. As the range condition deteriorates, inland saltgrass and black greasewood increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,800 pounds of air-dry vegetation in normal years. Production ranges from 2,500 pounds in favorable years to 1,200 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the alkalinity of the soils. Loss of the surface layer results in a severe decrease in productivity and in the potential of the unit to produce plants suitable for grazing. This unit is well suited to livestock watering ponds.

This map unit is in capability subclass VIs, nonirrigated.

The Tisworth soils are in the Saline Lowland, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Rock River soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Typic Fluvaquents are in the Wetland, 10 to 14 inch ppt., High Plains Southeast range site.

286—Travson-Rock outcrop complex, 10 to 40 percent slopes

This map unit is on ridge crests and dip slopes dissected by numerous draws and small canyons. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,600 to 6,400 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 47 degrees F, and the frost-free period is 110 to 120 days.

This unit is 55 percent Travson sandy loam and 30 percent Rock outcrop. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Kishona loam on foot slopes and draw bottoms. Also included are Shingle clay loam and Terro sandy loam intermixed with the Travson soils. Included areas make up 15 percent of the total acreage.

The Travson soils are very shallow or shallow and are somewhat excessively drained. They formed in residuum derived dominantly from sandstone. The surface layer is typically yellowish brown sandy loam 3 inches thick. The underlying material is light yellowish brown gravelly sandy loam 8 inches thick. Hard sandstone is at a depth of 11 inches. In some areas the surface layer is 10 to 20 percent covered by flagstones.

Permeability of the Travson soils is moderately rapid. Available water capacity is very low. The effective rooting depth is 6 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Rock outcrop consists of exposures of hard sandstone.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Travson soils is mainly needleandthread, Indian ricegrass, mutton bluegrass, bluebunch wheatgrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge increases. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. Proper management of livestock grazing helps to protect the soils from excessive erosion. This unit is poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The Travson soils are in capability subclass VIIe, nonirrigated, and Rock outcrop is in capability class VIII.

The Travson soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Kishona soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Shingle soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Terro soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

287—Typic Fluvaquents-Aquic Ustifluvents, saline, complex, 0 to 3 percent slopes

This map unit is on flood plains. The native vegetation is mainly grasses. Elevation is 5,800 to 6,700 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 41 to 46 degrees F, and the frost-free period is 100 to 120 days.

This unit is 70 percent Typic Fluvaquents and 15 percent Aquic Ustifluvents. The Typic Fluvaquents are on the lower positions of the flood plains and the Aquic Ustifluvents are on the higher positions of the flood plains. Inclusions of other soils make up 15% of the unit.

The Typic Fluvaquents are very deep and poorly drained. They formed in alluvium derived from various sources. The properties of these soils vary considerably from area to area, as well as within an area. The surface layer is commonly covered with a mat of slightly decomposed grass fibers 1 to 2 inches thick. The surface layer is sandy loam, loam, sandy clay loam, clay loam, or clay 2 to 7 inches thick. The underlying material is highly stratified and may contain textures of sandy loam, loam, sandy clay loam, clay loam or clay to a depth of 60 inches or more. These soils are slightly saline to strongly saline. Most uses are limited by the wetness and flooding.

Permeability of the Typic Fluvaquents varies from moderate to slow. Available water capacity varies from moderate to high. The effective rooting depth is 60 inches or more for plants that can tolerate a water table, but it is 6 to 12 inches for plants that cannot. Runoff is slow and the hazard of water erosion is slight. A seasonal high water table is at a depth of 0 to 1 foot from April through June. These soils are subject to occasional, brief periods of flooding from March through June.

The Aquic Ustifluvents are very deep and somewhat poorly drained. They formed in alluvium derived from various sources. The properties of these soils vary considerably from area to area, as well as within an area. The surface layer is sandy loam, loam, sandy clay loam, clay loam, or clay 2 to 4 inches thick. The underlying material is highly stratified, strongly saline, and may contain textures of sandy loam, loam, sandy clay loam, clay loam, or clay to a depth of 60 inches or more. These soils are sodic.

Permeability of the Aquic Ustifluvents varies from moderate to slow. Available water capacity varies from low to moderate. The effective rooting depth is 60 inches or more for plants that can tolerate wet, saline soils, but it is 5 to 15 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. A seasonal high water table is at a depth of 1 to 2 feet from April through June. These soils are subject to a rare hazard of flooding in spring and early summer.

Most of this unit is used for livestock grazing and wildlife habitat. A few areas are used for hay and pasture.

If this unit is used for hay and pasture, the main limitations are the salinity, alkalinity, and wetness of the soils. Grazing when the soils are wet results in compaction of the surface layer. Replanting of the Typic Fluvaquents is limited because of the wetness of the soil. The wetness, salinity, and alkalinity of the soils limits the selection of desirable plants available for planting on the Aquic Ustifluvents. To maximize production, species of plants that tolerate saline and alkaline soils should be planted. If irrigation is used water should not be applied to the Typic Fluvaquents because these soils are rarely dry enough to need irrigation. If the Aquic Ustifluvents are irrigated, water should only be applied after the level of the water table is low, usually around midsummer. This will avoid soil saturation for long periods of time and will result in more favorable forage production. Water should be applied at a rate necessary to avoid the raising of the level of the water table.

The potential plant community on the Typic Fluvaquents is mainly basin wildrye, slender wheatgrass, and tufted hairgrass. As the range condition deteriorates, sedges, shrubby cinquefoil, rubber rabbitbrush, and willows increase in abundance. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 3,700 pounds of air-dry vegetation in normal years. Production ranges from 4,300 pounds in favorable years to 3,000 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the wetness and flooding. If the amount of plant cover is reduced, the hazards of gullying, streambank cutting, and sheet erosion when the soils are flooded will increase. Grazing should be delayed until the soils have drained sufficiently and are firm enough to withstand trampling by livestock. These soils are moderately well suited to livestock watering ponds. Because wetness limits the types of equipment that can be used, excavations should be planned for a time when the water table is at its lowest level, usually in the fall.

The potential plant community on the Aquic Ustifluvents is mainly basin wildrye, alkali bluegrass, and alkali sacaton. As the range condition deteriorates, inland saltgrass and greasewood increase in abundance. As the range condition further deteriorates, annual forbs and grasses invade. The potential plant community produces about 3,000 pounds of air-dry vegetation in normal years. Production ranges from 3,400 pounds in favorable years to 2,500 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the salinity of the soils. If the amount of plant cover is reduced, protection from flooding is needed to control gullying, streambank cutting, and sheet erosion. Grazing should be delayed until the soils have drained sufficiently and are firm enough to withstand trampling by livestock. These soils are moderately well suited to livestock watering ponds. Because wetness limits the types of equipment that can be used, excavations should be planned for a time when the water table is at its lowest level, usually in the fall.

The Typic Fluvaquents are in capability subclass VIw, nonirrigated. The Aquic Ustifluvents are in capability subclass VIs, nonirrigated.

The Typic Fluvaquents are in the Subirrigated, 10 to 14 inch ppt., High Plains Southeast range site. The Aquic Ustifluvents are in the Saline Subirrigated, 10 to 14 inch ppt., High Plains Southeast range site.

288—Typic Haplaquolls, 0 to 4 percent slopes

These very deep, poorly drained soils are in swales and drainageways. They formed in alluvium derived from various sources. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,300 to 7,800 feet. The annual precipitation is 13 to 19 inches, the annual air temperature is 37 to 43 degrees F, and the frost-free period is 80 to 110 days.

The properties of these soils vary considerably from area to area, as well as within an area. The surface layer is sandy loam, loam, silt loam, clay loam or clay 7 to 14 inches thick. The underlying material to a depth of 60 inches or more is sandy loam, loam, silt loam, clay loam, or clay with some areas underlain by sand and gravel.

Included in this unit on alluvial fans and terraces are small areas of Bosler sandy loam, Forelle loam, Nunnston loam, Pinelli loam, and Relsob sandy loam. Included areas make up 20 percent of the total acreage.

Permeability of the Typic Haplaquolls varies from moderate to slow. Available water capacity varies from moderate to high. The effective rooting depth is 60 inches or more for plants that can tolerate a water table, but it is 12 to 24 inches for plants that cannot. Runoff is slow and the hazard of water erosion is slight. A seasonal high water table is at a depth of 1 to 2 feet from May through July. These soils are subject to a rare hazard of flooding.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly basin wildrye, tufted hairgrass, slender wheatgrass, and Nebraska sedge. As the range condition deteriorates, sedges and willows increase in abundance. As the range condition further deteriorates, Kentucky bluegrass and annuals invade. The potential plant community produces about 4,000 pounds of air-dry vegetation in normal years. Production ranges from 4,500 pounds in favorable years to 3,300 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the wetness. If the amount of plant cover is reduced, the hazards of gullying, streambank cutting, and sheet erosion when the soils are flooded will increase. Grazing should be delayed until the soils have drained sufficiently and are firm enough to withstand trampling by livestock. These soils are moderately suited to livestock watering ponds. Because wetness limits the types of equipment that can be used, excavations should be planned for a time when the water table is at its lowest level, usually in the fall.

This map unit is in capability subclass Vw, nonirrigated.

The Typic Haplaquolls are in the Subirrigated, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Bosler and Pinelli soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Nunnston and Relsob soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site.

289—Typic Torrifluvents, 0 to 3 percent slopes

These very deep, well drained soils are on flood plains. They formed in alluvium derived from various sources. The native vegetation is mainly grasses and shrubs. Elevation is 5,700 to 6,000 feet. The annual precipitation

is 7 to 9 inches, the annual air temperature is 45 to 47 degrees F, and the frost-free period is 110 to 120 days.

The properties of these soils vary considerably from area to area, as well as within an area. The surface layer is sandy loam, very fine sandy loam, loam, silt loam, or silty clay loam 2 to 6 inches thick. The underlying material, to 60 inches or more, is highly stratified and may contain textures of sandy loam, very fine sandy loam, loam, silt loam, or silty clay loam with some areas having sand and gravel below a depth of 20 inches. Colors range from weak red to light gray. These soils are moderately saline or strongly saline and moderately alkaline to very strongly alkaline. Most agricultural uses are limited by the salinity and alkalinity of these soils.

Included in this unit, adjacent to stream channels, are 10 percent sand and gravel bars and 5 percent saline Aquic Ustifluvents.

Permeability of the Typic Torrifluvents varies from moderately slow to moderately rapid. Available water capacity varies from low to high. The effective rooting depth is 60 inches or more for plants that can tolerate saline and alkaline soils, but it is 10 to 15 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. These soils are subject to a rare hazard of flooding.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Typic Torrifluvents is mainly alkali sacaton, basin wildrye, western wheatgrass, and greasewood. As the range condition deteriorates, greasewood and inland saltgrass increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,600 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the low annual precipitation and the salinity and alkalinity of the soils. If the amount of plant cover is reduced, the hazards of gullying, streambank cutting, and sheet erosion when the soils are flooded will increase. Due to the variability of these soils, their suitability for livestock watering ponds must be determined by onsite investigation.

This map unit is in capability subclass VIs, nonirrigated.

The Typic Torrifluvents are in Saline Lowland, 5 to 9 inch ppt., Wind River Basin range site. In a few areas these soils are in the Sandy, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of saline Aquic Ustifluvents are in the Saline Subirrigated, 5 to 9 inch ppt., Wind River Basin range site.

290—Uffens, thick surface-Uffens very fine sandy loams, 0 to 6 percent slopes

This map unit is on alluvial fans and terraces. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,800 to 6,200 feet. The annual precipitation is 7 to 9 inches, the annual air temperature is 44 to 46 degrees F, and the frost-free period is 110 to 130 days.

This unit is 45 percent Uffens, thick surface, very fine sandy loam and 35 percent Uffens very fine sandy loam. The Uffens, thick surface soils are on the upper portion of fans and on low knolls with 3 to 6 percent slopes. The Uffens soils are on the lower portions of fans with 0 to 3 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Effington clay loam, moderately deep soils, and Typic Torrifluvents adjacent to drainageways. Included areas make up 20 percent of the total acreage.

The Uffens, thick surface soils are very deep and well drained. They formed in alluvium derived dominantly from sodic shale. The surface layer is typically pale brown very fine sandy loam 6 inches thick. The upper part of the subsoil is yellowish brown, strongly alkaline sandy clay loam 9 inches thick. The lower part, to a depth of 60 inches or more, is pale olive, very strongly alkaline loam.

Permeability of the Uffens, thick surface soils is moderately slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more for plants that can tolerate saline and alkaline soils, but it is 10 to 20 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

The Uffens soils are very deep and well drained. They formed in alluvium derived dominantly from sodic shale. The surface layer is typically light olive brown very fine sandy loam 2 inches thick. The upper 11 inches of the subsoil is pale brown, strongly alkaline clay loam. The next 5 inches is light brownish gray, very strongly alkaline clay loam. The next part, to a depth of 40 inches, is pale yellow, very strongly alkaline loam. The lower part, to a depth of 60 inches or more, is yellowish brown, strongly alkaline loam.

Permeability of the Uffens soils is moderately slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more for plants that can tolerate saline and alkaline soils, but it is 5 to 15 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Uffens, thick surface soils are mainly western wheatgrass, needleandthread, and big sagebrush. As the range condition deteriorates, blue grama, Sandberg bluegrass, and big sagebrush increase in abundance. As the range condition further deteriorates, annuals and pricklypear invade. The potential plant community produces about 400 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 225 pounds in unfavorable years.

The potential plant community on the Uffens soils is mainly birdfoot sagebrush, gardner saltbush, bottlebrush squirreltail, Indian ricegrass, and western wheatgrass. As the range condition deteriorates, birdfoot sagebrush increases. As the range condition further deteriorates, annual forbs invade. The potential plant community produces about 200 pounds of air-dry vegetation in normal years. Production ranges from 300 pounds in favorable years to 100 pounds in unfavorable years.

The production of vegetation suitable for livestock grazing on this unit is limited by the alkalinity of the subsoil and low annual precipitation. Loss of the surface layer results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for grazing. This unit is well suited to livestock watering ponds.

This map unit is in capability subclass VIs, nonirrigated.

The Uffens, thick surface soils are in the Loamy, 5 to 9 inch ppt., Wind River Basin range site. The Uffens soils are in the Impervious Clay, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Effington soils are in the Impervious Clay, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Typic Torrifluvents are in the Loamy, 5 to 9 inch ppt., Wind River Basin range site, and in the Saline Lowland, 5 to 9 inch ppt., Wind River Basin range site.

291—Uffens, runon-Typic Torrifluvents complex, 0 to 3 percent slopes

This map unit is on terraces and flood plains. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,200 to 6,300 feet. The annual precipitation is 7 to 9 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 50 percent Uffens very fine sandy loam and 30 percent Typic Torrifluvents. The Uffens soils are on terraces with 0 to 3 percent slopes, and Typic Torrifluvents are on flood plains with 0 to 3 percent slopes.

Included in this unit are 10 percent Effington silty clay loam on nearly level terraces and 10 percent Slickspots in nearly level microbasins. A few areas have a higher percentage of Effington soils as an inclusion.

The Uffens soils are very deep and well drained. They formed in alluvium derived dominantly from sodic sandstone, siltstone, and shale. The surface layer is typically pale yellow very fine sandy loam 5 inches thick. The upper 7 inches of the subsoil is light yellowish brown, very strongly alkaline clay loam. The lower part, to a depth of 60 inches or more, is light yellowish brown, very strongly alkaline loam. In some areas the surface layer is loam or clay loam.

Permeability of the Uffens soils is moderately slow. Available water capacity is moderate. The effective rooting depth is 60 inches or more for plants that can tolerate saline and alkaline soils, but it is 5 to 15 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

The Typic Torrifluvents are very deep and well drained. They formed in alluvium derived from various sources. The properties of these soils vary considerably from area to area, as well as within an area. The surface layer is sandy loam, very fine sandy loam, loam, silt loam, or silty clay loam 2 to 6 inches thick. The underlying material, to 60 inches or more, is highly stratified and may contain textures of sandy loam, very fine sandy loam, loam, silt loam, or silty clay loam with some areas having sand and gravel below a depth of 20 inches. These soils are moderately saline or strongly saline and strongly alkaline or very strongly alkaline. Most agricultural uses are limited by the salinity and alkalinity of these soils.

Permeability of the Typic Torrifluvents varies from moderately slow to moderately rapid. Available water capacity varies from low to high. The effective rooting depth is 60 inches or more for plants that can tolerate saline and alkaline soils, but it is 10 to 15 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. These soils are subject to a rare hazard of flooding.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly alkali sacaton, western wheatgrass, basin wildrye, and greasewood. As the range condition deteriorates, greasewood and inland saltgrass increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,600 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the low annual precipitation and the salinity and alkalinity of the soils. If the amount of plant cover is reduced, the hazards of gullying, streambank erosion, and sheet erosion when the soils are flooded will increase. Loss of the surface layer results in a severe decrease in productivity and in the potential of the unit to produce plants suitable for grazing. The Uffens soils are well suited to livestock watering ponds. Due to the variability of the Typic Torrifluvents, suitability for livestock watering ponds can only be determined by onsite investigation.

This map unit is in capability subclass VIs, nonirrigated.

The Uffens soils and Typic Torrifluvents are in the Saline Lowland, 5 to 9 inch ppt., Wind River Basin range site. Inclusions of Effington soils are in the Impervious Clay, 5 to 9 inch ppt., Wind River Basin range site.

292—Ulm clay loam, 2 to 6 percent slopes

These very deep, well drained soils are on alluvial fans below sedimentary uplifts. They formed in alluvium derived dominantly from siltstone, sandstone, and shale. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,200 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

The surface layer is typically grayish brown clay loam 4 inches thick. The upper part of the subsoil is grayish brown clay loam 12 inches thick. The lower 22 inches is light grayish brown clay loam. The substratum, to a depth of 60 inches or more, is light olive brown clay loam. In some areas the surface layer is sandy loam.

Included in this unit is 10 percent soils similar to the Ulm soils but with thin gravelly layers in the substratum.

Permeability of the Ulm soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for irrigated hay and pasture. It is also used for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly thickspike wheatgrass, green needlegrass, bluebunch wheatgrass, and sagebrush. As the range condition deteriorates, sagebrush and blue gamma increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,000 pounds of air-dry vegetation in normal years. Production ranges from 1,300 pounds in favorable years to 500 pounds in unfavorable years. These soils are only moderately well suited to livestock watering ponds because of the slope.

If this unit is used for irrigated hay and pasture, the main limitations are the restricted intake rate and the permeability. Applications of irrigation water should be adjusted to the available water capacity, the water intake rate of the soils, and the crop needs. Irrigation water should be applied carefully to avoid the buildup of a high water table. Irrigation water should be applied at a rate that ensures optimum production without excessive deep percolation.

This map unit is in capability subclasses IIIe, irrigated, and IVe, nonirrigated. It is in the Clayey, 10 to 14 inch ppt., High Plains Southeast range site.

293—Ulm-Absted complex, 0 to 6 percent slopes

This map unit is on alluvial fans. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,500 to 6,300 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 48 degrees F, and the frost-free period is 110 to 130 days.

This unit is 60 percent Ulm loam and 30 percent Absted fine sandy loam. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit is Cadoma clay loam on hill crests. Also included are some small areas of Vonalee sandy loam and Hiland sandy loam. Included areas make up 10 percent of the total acreage.

The Ulm soils are very deep and well drained. They formed in alluvium derived dominantly from shale and sandstone. The surface layer is typically pale brown loam 2 inches thick. The upper part of the subsoil is yellowish brown clay loam 22 inches thick. The lower part, to a depth of 60 inches or more, is light yellowish brown clay loam. In some areas the surface layer is fine sandy loam.

Permeability of the Ulm soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

The Absted soils are very deep and well drained. They formed in alluvium derived dominantly from sodic shale. The surface layer is typically pale brown fine sandy loam 2 inches thick. The upper 9 inches of the subsoil is yellowish brown clay loam. The next 7 inches is light yellowish brown, very strongly alkaline clay loam. The lower part, to a depth of 60 inches or more, is pale brown, strongly alkaline clay loam. In some areas the surface layer is clay loam.

Permeability of the Absted soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more for plants that can tolerate saline and alkaline soils, but it is 10 to 20 inches for plants that cannot tolerate them. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, needleandthread, mutton bluegrass, green needlegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue gamma increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years.

Loss of the surface layer of the Absted soils results in a severe decrease in productivity and in the potential of the soils to produce plants suitable for grazing. This unit is only moderately well suited to livestock watering ponds because of the slope.

The Ulm soils are in capability subclass IVe, nonirrigated. The Absted soils are in capability subclass VIs, nonirrigated.

The Ulm and Absted soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Cadoma soils are in the Impervious Clay, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Vonalee soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Hiland soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

294—Ulrant loam, 3 to 15 percent slopes

These deep, well drained soils are on mountain foot slopes. They formed in slopewash alluvium derived dominantly from granite and limestone. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,900 to 7,200 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 38 to 40 degrees F, and the frost-free period is 80 to 100 days.

The surface layer is typically dark brown loam 4 inches thick. The upper 5 inches of the subsoil is brown loam. The next 14 inches is yellowish brown gravelly clay loam. The lower part is white gravelly loam 31 inches thick. Hard granite is at a depth of 54 inches. In some areas the surface layer is gravelly loam.

Included in this unit are 5 percent Hazton gravelly sandy loam on granite knobs, 5 percent Nunnston loam in swales, and 5 percent Typic Haplaquolls in drainageways.

Permeability of the Ulrant soils is moderate. Available water capacity is moderate. The effective rooting depth is 40 to 60 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly Idaho fescue, bluebunch wheatgrass, Griffith wheatgrass, prairie junegrass, and threetip sagebrush. As the range condition deteriorates, blue grama, threadleaf sedge, threetip sagebrush, and rabbitbrush increase in abundance. As the range condition further deteriorates, broom snakeweed, pricklypear, annual grasses, and annual forbs invade. The potential plant community produces about 1,500 pounds of air-dry vegetation in normal years. Production ranges from 2,000 pounds in favorable years to 800 pounds in unfavorable years. This unit is poorly suited to livestock watering ponds because of the slope and the depth to bedrock.

This map unit is in capability subclass IVe, nonirrigated.

The Ulrant soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Hazton soils are in the Shallow Igneous, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Nunnston soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Typic Haplaquolls are in the Subirrigated, 15 to 19 inch ppt., Foothills and Mountains Southeast range site.

295—Urban land-Clarkelen, gravelly substratum, complex, 0 to 4 percent slopes

This map unit is on flood plains of the North Platte River and its major tributaries. The native vegetation is mainly grasses, shrubs, and forbs. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

This unit is 55 percent Urban land and 35 percent Clarkelen sandy loam.

Included in this unit are small areas of Haverdad clay loam in slight depressions below terrace breaks, Rivra fine sandy loam in swales, areas of sandy and gravelly soils on knobs and terrace breaks, and areas where soils have been removed or filled. Included areas make up 10 percent of the total acreage.

Urban land is land that is covered by streets, parking lots, buildings, and other structures of urban areas.

The Clarkelen soils are very deep and somewhat excessively drained. They formed in alluvium derived from various sources. The surface layer is typically brown sandy loam 2 inches thick. The upper 40 inches of the underlying material is light yellowish brown sandy loam stratified with thin layers of loamy sand and loam. The lower part, to a depth of 60 inches or more, is light yellowish brown very gravelly sand.

Permeability of the Clarkelen soils is moderately rapid. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe. This unit is somewhat protected by major water-control structures, but it is subject to a rare hazard of flooding.

This unit is used mainly for homesite and urban development.

If the Clarkelen soils are used for homesite and urban development, the main limitations are the hazards of wind erosion, flooding, and contamination of ground water. Topsoil can be stockpiled and used to reclaim areas disturbed during construction. Excavation for houses and access roads can expose material that is highly susceptible to wind erosion. Revegetation of disturbed areas around construction sites as soon as possible will help to control wind erosion. If the density of housing is moderate to high, community sewage systems are needed to prevent contamination of ground water supplies as a result of seepage from onsite sewage disposal systems.

The Clarkelen soils are in capability subclass IVe, nonirrigated.

296—Urban land-Docpar complex, 0 to 6 percent slopes

This map unit is on terraces of the North Platte River. The native vegetation is mainly grasses, shrubs, and forbs. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

This unit is 55 percent Urban land and 35 percent Docpar loam.

Included in this unit are small areas of Silhouette clay loam below upland breaks and areas where soils have been removed or filled. Included areas make up 10 percent of the total acreage.

Urban land is land covered by streets, parking lots, buildings, and other structures of urban areas.

The Docpar soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically light brownish gray loam 6 inches thick. The upper part of the subsoil is light brownish gray loam 12 inches thick. The lower 7 inches is pale brown loam. The substratum, to a depth of 60 inches or more, is pale brown fine sandy loam stratified with thin layers of loamy fine sand and sand.

Permeability of the Docpar soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used for homesite and urban development.

If this unit is used for homesite and urban development, the main limitations are the restricted permeability and the hazard of wind erosion. Septic tank absorption lines should be installed below the layer with the restricted permeability. Excavation for houses and access roads can expose material that is highly susceptible to wind erosion. Revegetation of disturbed areas around construction sites as soon as possible will help to control wind erosion. Topsoil can be stockpiled and used to reclaim areas disturbed during construction.

The Docpar soils are in capability subclass IVe, nonirrigated.

297—Urban land-Savageton-Samday complex, 4 to 25 percent slopes

This map unit is on hills. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 5,400 feet. The annual precipitation is 10 to 12 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

This unit is 40 percent Urban land, 35 percent Savageton clay loam, and 20 percent Samday clay. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of very deep or deep clayey soils in areas that have been filled and Rock outcrop in areas that have had the soils removed. Included areas make up 5 percent of the total acreage.

Urban land is land covered by paved streets, parking lots, buildings, and other structures of urban areas.

The Savageton soils are moderately deep and well drained. They formed in slopewash alluvium or residuum derived dominantly from shale. The surface layer is typically light yellowish brown clay 2 inches thick. The upper part of the subsoil is light yellowish brown clay 16 inches thick. The lower part is pale yellow clay 8 inches thick. Soft platy shale is at a depth of 26 inches. In a few areas 10 to 20 percent of the surface is covered by gravel and cobbles.

Permeability of the Savageton soils is slow. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Samday soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from shale. The surface layer is typically grayish brown clay 1 inch thick. The underlying material is grayish brown clay 11 inches thick. Soft platy shale is at a depth of 12 inches.

Permeability of the Samday soils is slow. Available water capacity is very low. The effective rooting depth is 6 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

In most areas, the soils in this unit have been slightly altered by construction activities. Some areas have been filled with soil materials and others have had soil removed. The soils, however, have characteristics and behavior similar to the named soils.

This unit is used for homesite and urban development.

The potential plant community on the Savageton soils is mainly green needlegrass, western wheatgrass, and big sagebrush. The potential plant community on the Samday soils is mainly green needlegrass, western wheatgrass, Indian ricegrass, and birdfoot sagebrush.

If this unit is used for homesite and urban development, the main limitations are the slope, depth to bedrock, permeability, and the shrink-swell potential. Cuts needed to provide essentially level building sites can expose bedrock. Septic tank absorption fields of conventional size do not function properly because of the restricted permeability. Installation of septic tank absorption lines in or on the bedrock is not recommended due to the possibility of inadequate filtration and the possibility of contamination of ground water supplies. Effluent from septic tank absorption fields can also surface in downslope areas and thus create a hazard to health. Buildings and roads should be designed to offset the effects of shrinking and swelling. Properly designed building foundations and footings and runoff diverted away from the buildings helps to prevent the structural damage caused by shrinking and swelling. Water erosion during construction is a hazard in the steeper areas. Only the part of the site that is used for construction should be disturbed.

The Savageton soils are in capability subclass VIe, nonirrigated. The Samday soils are in capability subclass VIIs, nonirrigated.

298—Urban land-Silhouette complex, 0 to 4 percent slopes

This map unit is on terraces and alluvial fans. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 5,400 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 45 percent Urban land and 40 percent Silhouette clay loam. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Haverdad loam adjacent to stream channels and Kishona sandy loam on terrace breaks with 25 to 35 percent slopes. Also included are Petrie, wet clay loam in drainageways and some areas where soils have been removed or filled. Included areas make up 15 percent of the total acreage.

Urban land is land covered by streets, parking lots, buildings, and other structures of urban areas.

The Silhouette soils are very deep and well drained. They formed in alluvium derived dominantly from shale. The surface layer is typically light brownish gray clay loam 4 inches thick. The upper part of the subsoil is light brownish gray clay 8 inches thick. The underlying material, to a depth of 60 inches or more, is pale brown clay.

Permeability of the Silhouette soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for homesite and urban development.

If the Silhouette soils are used for homesite and urban development, the main limitations are the permeability and the shrink-swell potential. The restricted permeability increases the possibility of failure of septic tank absorption fields. Increasing the size of the field will help to overcome the restricted permeability. Properly designed building foundations and footings and runoff diverted away from the buildings will help to prevent the structural damage caused by shrinking and swelling.

The Silhouette soils are in capability subclass IVe, nonirrigated.

299—Urban land-Theedle-Shingle complex, 4 to 20 percent slopes

This map unit is on rolling hills. The native vegetation is mainly grasses and shrubs. Elevation is 5,200 to 5,400 feet. The annual precipitation is 10 to 12 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

This unit is 40 percent Urban land, 25 percent Theedle loam, and 20 percent Shingle loam. Urban land is intermixed throughout the unit, the Theedle soils are on hillsides with 10 to 20 percent slopes, and the Shingle soils are on hill crests and hillsides with 10 to 20 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Kishona loam in areas that have been filled, and Rock outcrop in areas that have had soil removed. Included areas make up 15 percent of the total acreage.

Urban land is land covered by paved streets, parking lots, buildings, and other structures of urban areas.

The Theedle soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone and shale. The surface layer is typically yellowish brown loam 2 inches thick. The upper 24 inches of the underlying material is light yellowish brown loam. The lower 8 inches is light yellowish brown clay loam. Soft interbedded sandstone and shale is at a depth of 34 inches.

Permeability of Theedle soils is moderate. Available water capacity is moderate. The effective rooting depth is 20 to 40 inches. Runoff is slow to medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Shingle soils are shallow and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone and shale. The surface layer is typically yellowish brown loam 1 inch thick. The underlying material is light yellowish brown clay loam 13 inches thick. Soft interbedded sandstone and shale is at a depth of 14 inches.

Permeability of the Shingle soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

In many areas, the soils in this unit have been altered by construction activities. Some areas have been filled with soil materials and others have had soil removed. The soils, however, have characteristics and behavior similar to the named soils.

This unit is used for homesite and urban development.

If this unit is used for homesite and urban development, the main limitations are the depth to bedrock, moderate shrink-swell potential, and the slope. Cuts needed to provide essentially level building sites expose bedrock. Topsoil should be stockpiled and used to reclaim areas disturbed during construction. Installation of septic tank absorption lines in or on the bedrock is not recommended due to the possibility of inadequate filtration and the possibility of contamination of ground water supplies. Effluent from septic tank absorption fields can also surface in downslope areas and thus create a hazard to health. Buildings and roads should be designed to offset the effects of the moderate shrink-swell potential.

The Theedle soils are in capability subclass IVe, nonirrigated. The Shingle soils are in capability subclass VIIs, nonirrigated.

300—Vonalee loamy sand, 3 to 10 percent slopes

These very deep, well drained soils are on stable dunes. They formed in eolian deposits. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,700 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

The surface layer is typically grayish brown loamy sand 2 inches thick. The upper 12 inches of the subsoil is brown sandy loam. The lower part, to a depth of 60 inches or more, is pale brown loamy sand.

Included in this unit are 10 percent Hiland loamy sand in swales, 10 percent Orpha loamy sand intermixed throughout the unit, and 5 percent Rock outcrop on hill crests.

Permeability of the Vonalee soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat. It is also used for homesite development.

The potential plant community on this unit is mainly needleandthread, prairie sandreed, and Indian ricegrass. As the range condition deteriorates, fringed sagewort and blue grama increase in abundance. As the range condition further deteriorates, broom snakeweed and cheatgrass invade. The potential plant community produces about 1,300 pounds of air-dry vegetation in normal years. Production ranges from 1,600 pounds in favorable years to 750 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the seepage potential.

If this unit is used for homesite development, the main limitation is the hazard of wind erosion. Excavation for houses and access roads can expose material that is highly susceptible to wind erosion. Revegetation of disturbed areas around construction sites as soon as possible helps to control the hazard of wind erosion. Cutbanks are not stable and are subject to slumping. If the density of housing is high, community sewage systems are needed to prevent contamination of ground water supplies as a result of seepage from onsite sewage disposal systems.

This map unit is in capability subclass IVe, nonirrigated.

The Vonalee soils are in the Sandy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Hiland soils are in the Sandy, 10 to 14 inch ppt., Northern Plains range site. Inclusions of Orpha soils are in the Sands, 10 to 14 inch ppt., Northern Plains range site.

301—Vonalee-Hiland complex, 3 to 15 percent slopes

This map unit is on stable dunes. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 6,300 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 45 percent Vonalee loamy sand and 40 percent Hiland sandy loam. The Vonalee soils are on convex slopes of 6 to 15 percent, and the Hiland soils are on concave slopes of 3 to 6 percent. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are Orpha loamy sand on stable dunes and Forkwood sandy loam in valleys and narrow drainageways. Also included are some small areas of Bowbac sandy loam. Included areas make up 15 percent of the total acreage.

The Vonalee soils are very deep and well drained. They formed in eolian deposits derived dominantly from sandstone. The surface layer is typically yellowish brown loamy sand 3 inches thick. The upper 11 inches of the subsoil is yellowish brown sandy loam. The next 5 inches is light yellowish brown sandy loam. The next part, to a depth of 32 inches, is brownish yellow loamy sand. The lower part, to a depth of 60 inches or more, is light yellowish brown loamy sand.

Permeability of the Vonalee soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Hiland soils are very deep and well drained. They formed in alluvium and eolian deposits derived dominantly from sandstone. The surface layer is typically pale brown sandy loam 5 inches thick. The upper part of the subsoil is yellowish brown sandy clay loam 21 inches thick. The lower part, to a depth of 60 inches or more, is very pale brown sandy loam.

Permeability of the Hiland soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Vonalee soils is mainly needleandthread, thickspike wheatgrass, threadleaf sedge, Indian ricegrass, and silver sagebrush. As the range condition deteriorates, silver sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

The potential plant community on the Hiland soils is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, mutton bluegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years.

This unit is poorly suited to livestock watering ponds because of the seepage potential.

This map unit is in capability subclass IVe, nonirrigated.

The Vonalee soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. The Hiland soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Orpha soils are in the Sands, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Forkwood and Bowbac soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

302—Vonalee-Slickspots complex, 3 to 15 percent slopes

This map unit is on stable dunes and associated microbasins. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 65 percent Vonalee sandy loam and 20 percent Slickspots. The Vonalee soils are on stable dunes with 3 to 15 percent slopes and Slickspots are in microbasins. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Orpha loamy sand on stable dunes and Kishona loam on alluvial fans. Included areas make up 15 percent of the total acreage.

The Vonalee soils are very deep and well drained. They formed in eolian deposits derived dominantly from sandstone. The surface layer is typically brown sandy loam 6 inches thick. The upper part of the subsoil is yellowish brown sandy loam 22 inches thick. The lower part, to a depth of 60 inches or more, is light yellowish brown sandy loam. In some areas the surface layer is loamy sand.

Permeability of the Vonalee soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

Slickspots are areas of loamy or clayey, strongly alkaline to very strongly alkaline soils. They support little or no vegetation.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Vonalee soils is mainly needleandthread, thickspike wheatgrass, Indian ricegrass, threadleaf sedge, and silver sagebrush. As the range condition deteriorates, silver sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years. These soils are poorly suited to livestock watering ponds because of the seepage potential.

The Vonalee soils are in capability subclass IVe, nonirrigated. Slickspots are in capability class VIII.

The Vonalee soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Orpha soils are in the Sands, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Kishona soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

303—Whiteriver loam, 0 to 6 percent slopes

These very deep, well drained soils are on plateaus. They formed in alluvium or eolian deposits, derived from various sources, overlying material derived from tuffaceous siltstone. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,400 to 7,600 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 37 to 42 degrees F, and the frost-free period is 90 to 110 days.

The surface layer is typically dark brown and brown loam 5 inches thick. The upper 14 inches of the subsoil is brown and pale brown clay loam. The next 4 inches is pale brown clay loam. The lower part, to a depth of 60 inches or more, is light gray clay loam. In some areas the surface layer is very fine sandy loam.

Included in this unit are Bateson loam on convex slopes and Diamondville fine sandy loam on hill crests. Also included are small areas of Typic Fluvaquents in narrow drainageways and gravelly soils on hill crests and knolls. Included areas make up 15 percent of the total acreage.

Permeability of the Whiteriver soils is slow. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, green needlegrass, mutton bluegrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. This unit is only moderately well suited to livestock watering ponds because of the slope.

This map unit is in capability subclass IVe, nonirrigated.

The Whiteriver soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Bateson and Diamondville soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Typic Fluvaquents are in the Subirrigated, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of gravelly soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

304—Woosley-Starley association, 6 to 30 percent slopes

This map unit is on hills and valley sides. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 7,500 to 7,800 feet. The annual precipitation is 15 to 19 inches, the annual air temperature is 34 to 36 degrees F, and the frost-free period is less than 80 days. Frost commonly occurs during the summer months.

This unit is 45 percent Woosley loam and 35 percent Starley cobbly loam. The Woosley soils are on foot slopes with 6 to 15 percent slopes and the Starley soils are on hill crests and back slopes with 15 to 30 percent slopes.

Included in this unit are small areas of Decross loam on nearly level valley floors, Nielson loam on steep hillslopes, and reddish brown clay loam soils on hill crests. Included areas make up 20 percent of the total acreage.

The Woosley soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from limestone. The surface layer is typically dark grayish brown loam 5 inches thick. The upper part of the subsoil is grayish brown clay loam 13 inches thick. The next 6 inches is yellowish brown loam. The lower 8 inches is light yellowish brown loam. Hard fractured limestone is at a depth of 32 inches.

Permeability of the Woosley soils is moderate. Available water capacity is moderate. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Starley soils are very shallow or shallow and are well drained. They formed in residuum derived dominantly from limestone. The surface layer is typically dark brown cobbly loam 8 inches thick. The upper part of the subsoil is brown very cobbly loam 6 inches thick. The lower part is very pale brown very cobbly loam 4 inches thick. Hard fractured limestone is at a depth of 18 inches. In some areas the surface layer is very gravelly loam.

Permeability of the Starley soils is moderate. Available water capacity is very low. Effective rooting depth is 7 to

20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Woosley soils is mainly bluebunch wheatgrass, Griffith wheatgrass, Idaho fescue, prairie junegrass, and sagebrush. As the range condition deteriorates, blue grama, threadleaf sedge, sagebrush, and rabbitbrush increase in abundance. As the range condition further deteriorates, broom snakeweed, pricklypear, annual grasses, and annual forbs invade. The potential plant community produces about 1,500 pounds of air-dry vegetation in normal years. Production ranges from 2,000 pounds in favorable years to 800 pounds in unfavorable years. These soils are poorly suited to livestock water ponds because of the depth to bedrock and the slope.

The potential plant community on the Starley soils is mainly bluebunch wheatgrass, Griffith wheatgrass, Parry danthonia, and black sagebrush. As the range condition deteriorates, Sandberg bluegrass, prairie junegrass, one-spike oatgrass, and threadleaf sedge increase in abundance. As the range condition further deteriorates, broom snakeweed, curlycup gumweed, and annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 800 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. These soils are poorly suited to livestock watering ponds because of the depth of bedrock and the slope.

The Woosley soils are in capability subclass VIe, nonirrigated. The Starley soils are in capability subclass VIIs, nonirrigated.

The Woosley soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. The Starley soils are in the Shallow Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Decross and reddish brown clayey soils are in the Loamy, 15 to 19 inch ppt., Foothills and Mountains Southeast range site. Inclusions of Nielson soils are in the Very Shallow, 15 to 19 inch ppt., Foothills and Mountains Southeast range site.

305—Worf-Bowbac fine sandy loams, 4 to 12 percent slopes

This map unit is on dip slopes. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,200 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

This unit is 60 percent Worf fine sandy loam and 20 percent Bowbac fine sandy loam. The Worf soils are on convex and planar slopes of 4 to 12 percent, and the Bowbac soils are on concave slopes of 4 to 8 percent. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Sunup very gravelly loam, Taluce fine sandy loam, and Rock outcrop on hill crests. Included areas make up 20 percent of the total acreage.

The Worf soils are shallow and well drained. They formed in residuum derived dominantly from sandstone. The surface layer is typically grayish brown fine sandy loam 2 inches thick. The upper part of the subsoil is yellowish brown sandy clay loam 6 inches thick. The lower part is light yellowish brown fine sandy loam 6 inches thick. Soft platy sandstone is at a depth of 14 inches. In some areas the surface layer is channery fine sandy loam.

Permeability of the Worf soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

The Bowbac soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone. The surface layer is typically brown fine sandy loam 3 inches thick. The upper 7 inches of the subsoil is yellowish brown sandy clay loam. The next 5 inches is light yellowish brown sandy clay loam. The lower part is light yellowish brown fine sandy loam 13 inches thick. Soft platy sandstone is at a depth of 28 inches.

Permeability of the Bowbac soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat. It is also used for homesite development.

The potential plant community on the Worf soils is mainly bluebunch wheatgrass, western wheatgrass, mutton bluegrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils.

The potential plant community on the Bowbac soils is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years.

This unit is poorly suited to livestock watering ponds because of the depth to bedrock.

If this unit is used for homesite development, the main limitation is the depth to bedrock. Cuts needed to provide essentially level building sites can expose bedrock. Installation of septic tank absorption lines in or on the bedrock is not recommended due to the possibility of inadequate filtration and the possibility of contamination of ground water supplies. Effluent from septic tank absorption fields can surface in downslope areas and thus create a hazard to health. Topsoil can be stockpiled and used to reclaim areas disturbed during construction. Revegetation of disturbed areas around construction sites as soon as possible will help to control wind erosion.

The Worf soils are in capability subclass VIIs, nonirrigated. The Bowbac soils are in capability subclass IVe, nonirrigated.

The Worf soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Bowbac soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of the Sunup soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of the Taluce soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

306—Worf-Briggsdale loams, 3 to 15 percent slopes

This map unit is on dip slopes. The native vegetation is mainly grasses and shrubs. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

This unit is 50 percent Worf loam and 30 percent Briggsdale loam. The Worf soils are on concave slopes of 6 to 15 percent, and the Briggsdale soils are on planar slopes of 3 to 8 percent.

Included in this unit are small areas of Cushman loam intermixed with the Briggsdale soils and Taluce sandy loam on hill crests. Also included are Vonalee loamy sand on the upper portion of dip slopes; and Rock outcrop on hill crests, on sides of draws, and intermixed with the Worf soils. Included areas make up 20 percent of the total acreage.

The Worf soils are very shallow or shallow and are well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone. The surface layer is typically brown loam 2 inches thick. The upper 8 inches of the subsoil is brown clay loam. The lower 3 inches is pale brown clay loam. Soft sandstone is at a depth of 13 inches.

Permeability of the Worf soils is moderate. Available water capacity is very low. The effective rooting depth is 9 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is moderate.

The Briggsdale soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone. The surface layer is typically brown loam 4 inches thick. The upper 6 inches of the subsoil is yellowish brown clay. The next 9 inches is pale brown clay. The lower part is pale brown clay loam 13 inches thick Soft sandstone is at a depth of 32 inches.

Permeability of the Briggsdale soils is slow. Available water capacity is moderate. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Worf soils is mainly needleandthread, western wheatgrass, bluebunch wheatgrass, mutton bluegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and black sagebrush increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils.

The potential plant community on the Briggsdale soils is mainly western wheatgrass, needleandthread, bluebunch wheatgrass, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years.

This unit is poorly suited to livestock watering ponds because of the depth to bedrock.

The Worf soils are in capability subclass VIIs, nonirrigated. The Briggsdale soils are in capability subclass IVe, nonirrigated.

The Worf soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. The Briggsdale soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Cushman soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Vonalee soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Taluce soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site.

307—Worf Variant-Cushman Variant-Peyton association, rolling

This map unit is on hills. The slope is 5 to 20 percent. The native vegetation is mainly grasses, shrubs, and forbs. Elevation is 5,800 to 6,200 feet. The annual precipitation is 15 to 17 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

This unit is 40 percent Worf Variant fine sandy loam, 35 percent Cushman Variant fine sandy loam, and 15 percent Peyton fine sandy loam. The Worf Variant soils are on hill crests with 5 to 20 percent slopes, the Cushman Variant soils are on hillsides with 10 to 15 percent slopes, and the Peyton soils are on foot slopes with 5 to 10 percent slopes.

Included in this unit are small areas of Gateridge fine sandy loam on steep hillsides with stands of ponderosa pine and Taluce Variant fine sandy loam on hill crests and knolls. Also included are soils with a thick sandy surface layer in small pockets that occur throughout the unit. Included areas make up 10 percent of the total acreage.

The Worf Variant soils are shallow and well drained. They formed in residuum derived dominantly from interbedded sandstone and shale. The surface layer is typically brown fine sandy loam 8 inches thick. The subsoil is brown sandy clay loam 9 inches thick. Soft interbedded sandstone and shale is at a depth of 17 inches. In some areas the surface layer is channery fine sandy loam.

Permeability of the Worf Variant soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The Cushman Variant soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone and shale. The surface layer is typically brown fine sandy loam 2 inches thick. The upper 6 inches of the subsoil is brown sandy clay loam. The lower 16 inches is strong brown sandy clay loam. Soft interbedded sandstone and shale is at a depth of 24 inches.

Permeability of the Cushman Variant soils is moderate. Available water capacity is low. The effective rooting depth is 20 to 40 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The Peyton soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from sandstone and shale. The surface layer is typically brown fine sandy loam 12 inches thick. The upper 6 inches of the subsoil is yellowish brown sandy clay loam. The lower 12 inches is brown clay loam. The substratum, to a depth of 60 inches or more, is yellowish brown loam.

Permeability of the Peyton soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Worf Variant soils is mainly Idaho fescue, bluebunch wheatgrass, needleandthread, and black sagebrush. As the range condition deteriorates, threadleaf sedge and unpalatable forbs increase in abundance. As the range condition further deteriorates, Kentucky bluegrass, red threeawn, and two-grooved milkvetch invade. The potential plant community produces about 1,400 pounds of air-dry vegetation in normal years. Production ranges from 1,800 pounds in favorable years to 900 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. These soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The potential plant community on the Cushman Variant and Peyton soils is mainly Idaho fescue, spike fescue, western wheatgrass, and green needlegrass. As the range condition deteriorates, sagebrush and unpalatable forbs increase in abundance. As the range condition further deteriorates, locoweed, red threeawn, and broom snakeweed invade. The potential plant community produces about 2,200 pounds of air-dry vegetation in normal years. Production ranges from 3,000 pounds in favorable years to 1,500 pounds in unfavorable years. The Cushman Variant soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope. The Peyton soils are poorly suited to livestock watering ponds because of the seepage potential.

The Worf Variant soils are in capability subclass VIIe, nonirrigated. The Cushman Variant and Peyton soils are in capability subclass IVe, nonirrigated.

The Worf Variant soils are in the Shallow Loamy, 15 to 19 inch ppt., Northern Plains range site. The Cushman Variant and Peyton soils are in the Loamy, 15 to 19 inch ppt., Northern Plains range site. Inclusions of Gateridge soils are in woodland. Inclusions of Taluce Variant soils are in the Shallow Sandy, 15 to 19 inch ppt., Northern Plains range site. Inclusions of soils with a thick sandy surface layer are in the Sandy, 15 to 19 inch ppt., Northern Plains range site.

308—Worfstone-McFadden-Lupinto complex, 6 to 50 percent slopes

This map unit is on terrace breaks along major drainageways. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 6,800 to 7,000 feet. The annual precipitation is 10 to 12 inches, the annual air temperature is 40 to 42 degrees F, and the frost-free period is 90 to 100 days.

This unit is 30 percent Worfstone sandy loam, 25 percent McFadden sandy loam, and 25 percent Lupinto gravelly sandy loam. The Worfstone soils are on crests and back slopes with 6 to 50 percent slopes, and the McFadden and Lupinto soils are on foot slopes with 6 to 20 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Blackhall fine sandy loam on hill crests and Edlin sandy loam and Rock River sandy loam on foot slopes. Also included are Cushool sandy loam and Brownsto Variant gravelly sandy loam on moderately sloping hillsides. Included areas make up 20 percent of the total acreage.

The Worfstone soils are shallow and well drained. They formed in residuum derived dominantly from conglomerate. The surface layer is typically pale brown sandy loam 2 inches thick. The upper part of the subsoil is yellowish brown very gravelly sandy clay loam 4 inches thick. The next 5 inches is pale brown extremely gravelly sandy loam. The lower 6 inches is very pale brown extremely gravelly sandy loam. Hard conglomerate is at a depth of 17 inches. In some areas the surface layer is gravelly sandy loam or very gravelly sandy loam.

Permeability of the Worfstone soils is moderate. Available water capacity is very low. The effective rooting depth is 10 to 20 inches. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The McFadden soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from sandstone. The surface layer is typically pale brown sandy loam 2 inches thick. The upper part of the subsoil is brown sandy loam 4 inches thick. The next 20 inches is light yellowish brown sandy loam. The lower part, to a depth of 60 inches or more, is very pale brown gravelly sandy loam.

Permeability of the McFadden soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is severe. The hazard of wind erosion is severe.

The Lupinto soils are very deep and well drained. They formed in slopewash alluvium derived dominantly from conglomerate. The surface layer is typically light brownish gray gravelly sandy loam 2 inches thick. The upper part of the subsoil is light brownish gray gravelly sandy clay loam 6 inches thick. The next 35 inches is very pale brown very gravelly sandy clay loam. The lower part, to a depth of 60 inches or more, is pale brown very gravelly sandy loam.

Permeability of the Lupinto soils is moderate. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is rapid and the hazard of water erosion is severe. The hazard of wind erosion is slight.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Worfstone soils is mainly bluebunch wheatgrass, western wheatgrass, Indian ricegrass, bottlebrush squirreltail, needleandthread, and black sagebrush. As the range condition deteriorates, black sagebrush and threadleaf sedge increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 450 pounds of air-dry vegetation in normal years. Production ranges from 600 pounds in favorable years to 250 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity and depth of the soils. The slope, where above 30 percent, limits access by livestock and results in overgrazing of the less sloping areas. The Worfstone soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

The potential plant community on the McFadden soils is mainly needleandthread, bluebunch wheatgrass, threadleaf sedge, mutton bluegrass, Indian ricegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge increases. As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils. The McFadden soils are poorly suited to livestock watering ponds because of the seepage potential and the slope.

The potential plant community on the Lupinto soils is mainly bluebunch wheatgrass, western wheatgrass, needleandthread, mutton bluegrass, and black sagebrush. As the range condition deteriorates, threadleaf sedge, prairie junegrass, and sagebrush increase in abundance.

As the range condition further deteriorates, annuals invade. The potential plant community produces about 900 pounds of air-dry vegetation in normal years. Production ranges from 1,200 pounds in favorable years to 700 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils. The Lupinto soils are poorly suited to livestock watering ponds because of the seepage potential and the slope.

The Worfstone soils are in capability subclass VIIe, nonirrigated. The McFadden and Lupinto soils are in capability subclass VIe, nonirrigated.

The Worfstone soils are in the Very Shallow, 10 to 14 inch ppt., High Plains Southeast range site. The McFadden soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. The Lupinto soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Blackhall soils are in the Shallow Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Edlin, Cushool, and Rock River soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Brownsto Variant soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

309—Zeomont-Ryan Park loamy sands, 5 to 15 percent slopes

This map unit is on stable dunes. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,900 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 100 to 110 days.

This unit is 65 percent Zeomont loamy sand and 20 percent Ryan Park loamy sand. The Zeomont soils are on crests and sides of the dunes with 6 to 15 percent slopes and the Ryan Park soils are on foot slopes with 5 to 10 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Bosler sandy loam on nearly level slopes, Rock River sandy loam in swales, and Dune land intermixed with the Zeomont soils. Included areas make up 15 percent of the total acreage.

The Zeomont soils are very deep and excessively drained. They formed in eolian deposits derived dominantly from sandstone. The surface layer is typically grayish brown loamy sand 5 inches thick. The upper 7 inches of the underlying material is brown loamy sand. The lower part, to a depth of 60 inches or more, is light gray and pale brown sand.

Permeability of the Zeomont soils is rapid. Available water capacity is low. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

The Ryan Park soils are very deep and well drained. They formed in alluvium and eolian deposits derived dominantly from sandstone. The surface layer is typically light brownish gray loamy sand 2 inches thick. The upper part of the subsoil is brown sandy loam 28 inches thick. The lower part, to a depth of 60 inches or more, is pinkish gray gravelly loamy sand.

Permeability of the Ryan Park soils is moderately rapid. Available water capacity is moderate. The effective rooting depth is 60 inches or more. Runoff is slow and the hazard of water erosion is slight. The hazard of wind erosion is severe.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on the Zeomont soils is mainly prairie sandreed, sand bluestem, needleandthread, Indian ricegrass, and silver sagebrush. As the range condition deteriorates, unpalatable forbs increase in abundance. As the range condition further deteriorates, annuals and broom snakeweed invade. The potential plant community produces about 2,000 pounds of air-dry vegetation in normal years. Production ranges from 2,500 pounds in favorable years to 1,400 pounds in unfavorable years. The production of vegetation suitable for livestock grazing is limited by the available water capacity of the soils. Proper management of livestock grazing helps to protect the soils from excessive erosion.

The potential plant community on the Ryan Park soils is mainly needleandthread, Indian ricegrass, thickspike wheatgrass, threadleaf sedge, and silver sagebrush. As the range condition deteriorates, fringed sagewort and blue grama increase in abundance. As the range condition further deteriorates, broom snakeweed and cheatgrass invade. The potential plant community produces about 1,200 pounds of air-dry vegetation in normal years. Production ranges from 1,500 pounds in favorable years to 700 pounds in unfavorable years.

This unit is poorly suited to livestock watering ponds because of the seepage potential.

The Zeomont soils are in capability subclass VIe, nonirrigated. The Ryan Park soils are in capability subclass IVe, nonirrigated.

The Zeomont soils are in the Sands, 10 to 14 inch ppt., Northern Plains range site. The Ryan Park soils are in the Sandy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Bosler and Rock River soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

310—Zigweid loam, 2 to 9 percent slopes

These very deep, well drained soils are on terraces and alluvial fans. They formed in alluvium derived from sandstone, siltstone, and shale. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 6,600 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

The surface layer is typically grayish brown loam 3 inches thick. The upper part of the subsoil is pale brown loam 11 inches thick. The lower part, to a depth of 60 inches or more, is light gray loam. In some areas the surface layer is very fine sandy loam.

Included in this unit are 5 percent Amodac very fine sandy loam, 5 percent Keyner fine sandy loam intermixed with the Zigweid soils, and 5 percent Haverdad loam on flood plains.

Permeability of the Zigweid soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. As the range condition deteriorates, big sagebrush and blue grama increase in abundance. As the range condition further deteriorates, annuals invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. The Zigweid soils are only moderately well suited to livestock watering ponds because of the seepage potential and the slope.

This map unit is in capability subclass IVe, nonirrigated.

The Zigweid soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Amodac soils are in the Saline Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Keyner soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Haverdad soils are in the Loamy Overflow, 10 to 14 inch ppt., High Plains Southeast range site. In the east-central part of the survey area, the Zigweid soils are in the Loamy, 10 to 14 inch ppt., Northern Plains range site.

311—Zigweid-Theedle loams, 3 to 15 percent slopes

This map unit is on hills and adjacent alluvial fans. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 50 percent Zigweid loam and 30 percent Theedle loam. The Zigweid soils are on foot slopes and alluvial fans with 3 to 9 percent slopes and the Theedle soils are on hillsides with 6 to 15 percent slopes. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are 5 percent Cushman loam on hillsides, 5 percent Forkwood loam on foot slopes and alluvial fans, and 10 percent Shingle loam on ridge crests.

The Zigweid soils are very deep and well drained. They formed in alluvium derived dominantly from sandstone and shale. The surface layer is typically brown loam 3 inches thick. The upper part of the subsoil is light olive brown loam 15 inches thick. The lower part, to a depth of 60 inches or more, is light yellowish brown loam.

Permeability of the Zigweid soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

The Theedle soils are moderately deep and well drained. They formed in slopewash alluvium and residuum derived dominantly from sandstone and shale. The surface layer is typically light brownish gray loam 2 inches thick. The underlying material is light brownish gray loam 34 inches thick. Soft shale is at a depth of 36 inches.

Permeability of Theedle soils is moderate. Available water capacity is moderate. The effective rooting depth is 20 to 40 inches. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

This unit is used mainly for livestock grazing and wildlife habitat.

The potential plant community on this unit is mainly western wheatgrass, bluebunch wheatgrass, needleandthread, and big sagebrush. As the range condition deteriorates, big sagebrush and rabbitbrush increase in abundance. As the range condition further deteriorates, annual forbs and cheatgrass invade. The potential plant community produces about 1,100 pounds of air-dry vegetation in normal years. Production ranges from 1,400 pounds in favorable years to 600 pounds in unfavorable years. The Zigweid soils are only moderately well suited to livestock watering ponds because of the seepage potential and the slope. The Theedle soils are poorly suited to livestock watering ponds because of the depth to bedrock and the slope.

This map unit is in capability subclass IVe, nonirrigated.

The Zigweid and Theedle soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Cushman and Forkwood soils are in the Loamy, 10 to 14 inch ppt., High Plains Southeast range site. Inclusions of Shingle soils are in the Shallow Loamy, 10 to 14 inch ppt., High Plains Southeast range site.

312—Zigweid-Urban land complex, 2 to 8 percent slopes

This map unit is on terraces. The native vegetation is mainly grasses, forbs, and shrubs. Elevation is 5,000 to 5,400 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 46 to 49 degrees F, and the frost-free period is 110 to 130 days.

This unit is 45 percent Zigweid clay loam and 40 percent Urban land. The components of this unit are so intricately intermingled that it was not practical to map them separately.

Included in this unit are small areas of Kishona loam on steep terrace breaks and some areas where soils have been removed or filled. Included areas make up 15 percent of the total acreage.

The Zigweid soils are very deep and well drained. They formed in alluvium derived from various sources. The surface layer is typically pale brown clay loam 4 inches thick. The upper part of the subsoil is pale brown clay loam 12 inches thick. The lower part, to a depth of 60 inches or more, is light brownish gray loam.

Permeability of the Zigweid soils is moderate. Available water capacity is high. The effective rooting depth is 60 inches or more. Runoff is medium and the hazard of water erosion is moderate. The hazard of wind erosion is moderate.

Urban Land is land covered by streets, parking lots, buildings, and other structures of urban areas.

This unit is used for homesite and urban development.

If the Zigweid soils are used for homesite and urban development, the main limitations are the moderately restricted permeability and moderate shrink-swell potential. The hazard of wind erosion is a concern that should be addressed. Increasing the size of the septic tank absorption field can help to overcome the limitation of the permeability. Buildings and roads should be designed to offset the effects of the moderate shrink-swell potential. Topsoil can be stockpiled and used to reclaim areas disturbed during construction. Revegetation of disturbed areas around construction sites as soon as possible will help to control the hazard of wind erosion.

The Zigweid soils are in capability subclass IVe, nonirrigated.

Use and Management of the Soils

This soil survey is an inventory and evaluation of the soils in the survey area. It can be used to adjust land uses to the limitations and potentials of natural resources and the environment. Also, it can help to prevent soil-related failures in land uses.

In preparing a soil survey, soil scientists, conservationists, engineers, and others collect extensive field data about the nature and behavioral characteristics of the soils. They collect data on erosion, droughtiness, flooding, and other factors that affect various soil uses and management. Field experience and collected data on soil properties and performance are used as a basis in predicting soil behavior.

Information in this section can be used to plan the use and management of soils for crops and pasture; as rangeland; as sites for buildings, sanitary facilities, highways, and other transportation systems, and parks and other recreational facilities; and for wildlife habitat. It can be used to identify the potentials and limitations of each soil for specific land uses and to help prevent construction failures caused by unfavorable soil properties.

Planners and others using soil survey information can evaluate the effect of specific land uses on productivity and on the environment in all or part of the survey area. The survey can help planners to maintain or create a land use pattern in harmony with the natural soil.

Contractors can use this survey to locate sources of sand and gravel, roadfill, and topsoil. They can use it to identify areas where bedrock, wetness, or very firm soil layers can cause difficulty in excavation.

Health officials, highway officials, engineers, and others may also find this survey useful. The survey can help them plan the safe disposal of wastes and locate sites for pavements, sidewalks, campgrounds, playgrounds, lawns, and trees and shrubs.

Crops and Pasture

The system of land capability classification (U.S. Dep. Agric., 1961) used by the Natural Resources Conservation Service is explained in this section. The estimated yields of the main crops and hay and pasture plants are listed for each soil.

Planners of management systems for individual fields or farms should consider the detailed information given in the description of each soil under the heading "Detailed Soil Map Units." Specific information can be obtained from the local office of the Natural Resources Conservation Service or the Cooperative Extension Service.

Yields per Acre

The average yields per acre that can be expected of the principal crops under a high level of management are shown in table 5. In any given year, yields may be higher or lower than those indicated in the table because of variations in rainfall and other climatic factors. The land capability classification of each map unit also is shown in the table.

The yields are based mainly on the experience and records of farmers, conservationists, and extension agents. Available yield data from nearby counties and results of field trials and demonstrations are also considered.

The management needed to obtain the indicated yields of the various crops depends on the kind of soil and the crop. Management can include drainage, erosion control, and protection from flooding; the proper planting and seeding rates; suitable high-yielding crop varieties; appropriate and timely tillage; control of weeds, plant diseases, and harmful insects; favorable soil reaction and optimum levels of nitrogen, phosphorus, potassium, and trace elements for each crop; effective use of crop residue, barnyard manure, and green manure crops; and harvesting that ensures the smallest possible loss.

For yields of irrigated crops, it is assumed that the irrigation system is adapted to the soils and to the crops grown, that good-quality irrigation water is uniformly applied as needed, and that tillage is kept to a minimum.

The estimated yields reflect the productive capacity of each soil for each of the principal crops. Yields are likely to increase as new production technology is developed. The productivity of a given soil compared with that of other soils, however, is not likely to change.

Crops other than those shown in table 5 are grown in the survey area, but estimated yields are not listed because the acreage of such crops is small. The local office of the Natural Resources Conservation Service or of the Cooperative Extension Service can provide information about the management and productivity of the soils for those crops.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils does not include major and generally expensive landforming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability for and limitations of groups of soils for rangeland or for engineering purposes.

In the capability system, soils are generally grouped at three levels—capability class, subclass, and unit. Only class and subclass are used in this survey.

Capability classes, the broadest groups, are designated by numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use. The classes are defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or that require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants or that require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants or that require very careful management, or both.

Class V soils are not likely to erode but have other limitations, impractical to remove, that limit their use.

Class VI soils have severe limitations that make them generally unsuitable for cultivation.

Class VII soils have very severe limitations that make them unsuitable for cultivation.

Class VIII soils and miscellaneous areas have limitations that nearly preclude their use for commercial crop production.

Capability subclasses are soil groups within one class. They are designated by adding a small letter, *e, w, s,* or *c,* to the class numeral, for example, IIe. The letter *e* shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c,* used in only some parts of the United States, shows that the chief limitation is climate that is very cold or very dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V contains only the subclasses indicated by *w, s,* or *c* because the soils in class V are subject to little or no erosion. They have other limitations that restrict their use to pasture, rangeland, woodland, wildlife habitat, or recreation.

The capability class or subclass of each soil is shown in table 5 and is also given in the section "Detailed Soil Map Units" and in the yields table.

Water Quality in Agriculture

The potential for impacting the quality of surface or ground water should be considered in the planning and management of all agricultural operations. The potential for impacting water quality exists whenever pesticides, fertilizers, and manure are used in proximity to surface water or aquifers. The main hazard is the removal of these materials from the application site by surface water runoff and soil leaching.

Impairment by Pesticides

Water quality can be impaired if pesticides are leached below the root zone or enter a water body when they are attached to suspended sediment or in solution of runoff waters. The potential for loss of pesticides by surface water runoff or leaching is a combined function of soil and pesticide properties, climate factors, kind of crop, and application method.

To minimize the potential for impairment of the quality of surface or ground water by pesticides, the use of a pest management system is recommended. Pest management systems target infestations of weeds, insects, or disease. These systems reduce the adverse effects of pest infestations on plant growth and crop production while minimizing the adverse effects to environmental resources. These systems utilize the most appropriate measures or combinations of measures for pest control, including biological, cultural, and chemical measures, and include consideration of environmental effects, health hazards, and economic benefits. Field scouting and economic thresholds are used to determine if pesticides should be used and the time of application. Only necessary, properly timed applications of pesticides are utilized.

In a pest management system, the time for the pesticide application is chosen with consideration of the soil moisture conditions, anticipated weather conditions, and irrigation schedules. Proper timing of pesticide applications reduces the potential for loss of pesticides by leaching or surface water runoff. Erosion-control practices are used to minimize soil loss, surface water runoff, and the transport of adsorbed or dissolved pesticides to surface waters.

Characteristics of pesticides, such as solubility, toxicity, degradation, and absorption, are considered in pesticide selection. Soil, geology, the depth to a water table, proximity to surface water, topography, and climate are site characteristics which affect pesticide transport. Considering the information on pesticide properties and site characteristics when pesticides are selected can minimize the potential for impairment of the quality of surface and ground water.

In table 6, the soils in the survey area have been rated for their relative potential for pesticide loss through leaching and surface water runoff. These ratings and information on pesticide properties, climate, kind of crop, and application method are used to determine the potential for water-quality impairment.

The soil leaching and surface loss potential ratings given in table 6 were developed from information on soil parameters. These ratings represent the relative capacity of a soil to retain a pesticide at the point of application, regardless of management or climatic inputs. The properties of pesticides, climatic factors, kind of crop, and application method were not considered in the development of these ratings.

The soil properties and features used in the development of the ratings for potential pesticide loss through soil leaching are those that affect infiltration rate, permeability, and the pesticide attenuation capacity. These soil properties are soil texture, surface layer thickness, organic matter content, structure, bulk density, permeability of the soil or bedrock, shrink-swell potential, the depth to bedrock, the depth to a water table, and slope. Infiltration rate is interpreted from the hydrologic soil group and slope.

The soil properties and features considered in the ratings for potential pesticide loss through surface water runoff are those that affect the rate of runoff and erosion. They include soil texture, organic matter content, structure, particle-size distribution, permeability, restricting layers, soil depth, the depth to a water table, flooding, slope, and shrink-swell potential.

A rating of *slight* indicates a slight probability for loss of pesticides if pesticides with very small, small, or medium loss potentials are used and a moderate probability of pesticide loss if pesticides with a large potential for loss are used. A rating of *moderate* indicates a slight probability for loss of pesticides if pesticides with very small or small loss potentials are used and a moderate probability of pesticide loss if pesticides with a medium or large potential for loss are used. A rating of *severe* indicates a moderate probability for loss of pesticides if pesticides with very small or small loss potentials are used and a high probability of pesticide loss if pesticides with a medium or large potential for loss are used.

In these ratings, the pesticide is considered to have been applied to bare soil by either surface or aerial methods. If the pesticide is applied to a field of growing crops or weeds, the potential for pesticide loss will be lower. Information on pesticide properties can be obtained from the local office of the Natural Resources Conservation Service or Extension Service or from pesticide dealers.

If the possibility for pesticide loss through soil leaching or surface water runoff is identified, an onsite evaluation is usually necessary to determine the potential impacts on water quality. If water quality will be affected, the land user should consider alternative pesticides, alternative management practices, alternative application methods, or cultural or biological pest-control methods to reduce the potential for pesticide loss.

Impairment by Nutrients

An adequate and timely supply of nutrients is necessary for maximum crop production. It is important that nutrients added to the soil are efficiently used because nutrient amounts in excess of crop needs can result in pollution.

Nutrient management consists of measures that minimize the amount of nutrients available for potential impairment of the quality of surface and ground water while providing an optimum amount for crop production. The rate of fertilizer application is important in minimizing the loss through leaching and surface water runoff. The amount of fertilizer applied should be based on a realistic yield goal. A proper balance of essential nutrients and soil moisture is necessary. A deficiency of one element may reduce the use of other nutrients by the crop. The nutrients which have not been used by the crop are available for offsite transport. Soil tests are an important guide to the proper use of fertilizers. These tests, combined with information about soil type, previous cropping history, and anticipated soil moisture level, should be used to estimate fertilizer requirements. Growing crops which require a small amount of nitrogen, such as legumes, in rotation with crops that require a large amount of nitrogen reduces the potential for nutrient loss. Applying ammonium nitrogen fertilizers, such as anhydrous ammonia, can help to reduce nitrate leaching. If practical, incorporation of all fertilizer into the soil can reduce the loss by volatilization and surface water runoff.

Proper timing of fertilizer applications can be effective in reducing the potential loss of nutrients. Nitrogen should be applied as closely to the plant demand periods as possible. Split applications of nitrogen, especially on sandy soils, help to reduce leaching loss. Half of the required amount should be applied at planting time and the other half at the critical growth stage of the crop.

Irrigation water management is very effective in reducing the amount of nitrogen leached from irrigated fields. Irrigation efficiency must be high at all times to reduce the amount of leaching caused by deep percolation.

Practices that control soil erosion and runoff reduce the amount of nitrogen or phosphorus transported to surface waters. Maintaining adequate amounts of crop residue on the surface and maintaining good soil tilth increase water infiltration and reduce the potential for nutrient loss by surface water runoff.

Rangeland

About 95 percent of the Natrona County Area is rangeland. Nearly all of the farm income in the area is derived from the sale of livestock, both cattle and sheep. There are about an equal number of cattle and sheep ranches, and many ranches are both cattle and sheep operations. The ranches with cattle are usually cow-calf operations. Ranches vary in size with some exceeding 100,000 acres. Most are family owned and operated.

The precipitation within the county ranges from 5 to more than 20 inches annually. The lower precipitation zones are located in the basins, where winter snowpack is usually light. These areas are suitable for winter grazing by cattle and sheep. The higher elevations receive more precipitation and are normally covered by deep snowpacks during winter. They are suitable for grazing only during the summer and early fall. Winters throughout the county are normally severe enough to require supplemental feeding of livestock. Most of this feed is produced locally on the irrigated lands.

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the soil type. Effective management is based on the relationship between the soils and vegetation and water.

Table 7 shows, for each soil, the range site; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the average percentage of each species. Only those soils that are used as rangeland or are suited to use as rangeland are listed. Explanation of the column headings in table 7 follows.

A *range site* is a distinctive kind of rangeland that produces a characteristic natural plant community that differs from natural plant communities on other range sites in kind, amount, and proportion of range plants. The relationship between soils and vegetation was ascertained during this survey; thus, range sites generally can be determined directly from the soil map. Soil properties that affect moisture supply and plant nutrients have the greatest influence on the productivity of range plants. Soil reaction, salt content, and a seasonal high water table are also important.

Total production is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally caused by low available soil moisture.

Dry weight is the total annual yield per acre of air-dry vegetation. Yields are adjusted to a common percent of air-dry moisture content. The relationship of green weight to air-dry weight varies according to such factors as exposure, amount of shade, recent rains, and unseasonable dry periods.

Characteristic vegetation—the grasses, forbs, and shrubs that make up most of the potential natural plant community on each soil—is listed by common name. Under *composition*, the expected percentage of the total annual production is given for each species making up the characteristic vegetation. The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season.

Range management requires a knowledge of the kinds of soils and of the potential natural plant community. It also requires an evaluation of the present range condition. Range condition is determined by comparing the present plant community with the potential natural plant community on a particular range site. The more closely the existing community resembles the potential community, the better the range condition. Range condition is an ecological rating only.

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, a range condition somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Windbreaks and Environmental Plantings

Richard Rintamaki, State Biologist, Natural Resources Conservation Service, Casper, Wyoming, assisted in the preparation of this section.

Windbreaks protect livestock, buildings, and yards from wind and snow. They also protect fruit trees and gardens, and they furnish habitat for wildlife. Several rows of low- and high-growing broadleaf and coniferous trees and shrubs provide the most protection.

Field windbreaks are narrow plantings made at right angles to the prevailing wind and at specific intervals across the field. The interval depends on the erodibility of the soils and snow management objectives. Field windbreaks protect cropland and crops from wind, help to keep snow on the fields, and provide food and cover for wildlife.

Environmental plantings help to beautify and screen houses and other buildings, reduce building heating and cooling costs, and reduce noise. The plants, mostly evergreen shrubs and trees, are closely spaced. Tree and shrub plantings can also reduce wave action on ponds and harvest snow for stock water, wildlife water, and irrigation water. To ensure plant survival, a healthy planting stock of suitable species should be planted properly on a well prepared site and maintained in good condition.

Tables 8a, 8b, and 8c show the height that selected adaptable trees and shrubs are expected to reach, given adequate care, in 20 years for each represented soil group and planting zone. The windbreak suitability grouping and planting zone designation for each soil in the detailed soil map units is listed in tables 8a, 8b, and 8c. Definitions of soil groups and planting zones are given below. This information can be used as a guide in planning windbreaks and other tree and shrubs plantings.

Additional information on planning windbreaks and other environmental plantings as well as planting and caring for trees and shrubs can be obtained from local offices of the Natural Resources Conservation Service, the Cooperative Extension Service, or a commercial nursery.

The windbreak suitability groups in this survey area are described in the following paragraphs.

Windbreak suitability group 1.—The soils in this group are loamy or clayey, have less than 35 percent clay, or have a seasonal high water table. The upper 12 inches is free of carbonates, has a pH of less than 7.8, and is nonsaline.

This group is suitable for farmstead, feedlot, and field windbreaks. Planting may be delayed for a short period in spring because of wetness. Competition from weeds and grasses is the main limitation affecting the establishment of trees and shrubs.

Windbreak suitability group 1K.—The soils in this group are loamy and have less than 35 percent clay, and are subject to frequent flooding or have a seasonal high water table. In the upper 12 inches, they have free carbonates, have a pH of 7.8 to 9.0, or have an electrical conductivity of less than 4 millimhos per centimeter.

This group is suitable for farmstead, feedlot, and field windbreaks. Planting may be delayed for a short period in the spring because of wetness. Competition from weeds and grasses is an important limitation affecting the establishment of trees and shrubs. The free carbonates, high reaction, and low electrical conductivity affect the selection and rate of growth of plants.

Windbreak suitability group 3.—The soils in this group are loamy or clayey and have less than 35 percent clay throughout or are loamy in upper 20 inches and clayey in the lower part. They are moderately well drained or well drained. Available water capacity to a depth of 60 inches or more is more than 7.5 inches. In the upper 12 inches, these soils do not have free carbonates, have a pH of less than 7.8, and are nonsaline.

This group is well suited to farmstead, feedlot, and field windbreaks. Competition from weeds and grasses is an important limitation affecting the establishment of trees and shrubs.

Windbreak suitability group 4.—The soils in this group are loamy or they have less than 35 percent clay in the upper 8 to 20 inches and are clayey in the lower part. They are somewhat poorly drained, moderately well drained, or well drained.

This group is suitable for farmstead, feedlot, and field windbreaks. A high content of clay in the lower part of the soils affects the selection and rate of growth of trees and shrubs. Competition from weeds and grasses is an important limitation affecting the establishment and management of trees and shrubs.

Windbreak suitability group 4C.—The soils in this group have more than 35 percent clay throughout when mixed to a depth of 8 inches and are somewhat poorly drained, moderately well drained, or well drained.

This group is suitable for farmstead, feedlot, and field windbreaks. The high content of clay affects the selection and rate of growth of trees and shrubs. Competition from weeds and grasses is an important limitation affecting the establishment and management of trees and shrubs. Because of the high content of clay, extra care is need to ensure that the soil is firmly packed around the roots when trees and shrubs are planted.

Windbreak suitability group 5.—The soils in this group are loamy and have a moderate available water capacity. They are moderately well drained or well drained. In the upper 12 inches, they do not have free carbonates, have a pH of less than 7.8, and are nonsaline.

This group is suitable for farmstead, feedlot, and field windbreaks. Competition from weeds and grasses is an important limitation affecting the establishment and management of trees and shrubs.

Windbreak suitability group 5K.—The soils in this group are loamy and have a moderate available water capacity. They are moderately well drained or well drained. In the upper 12 inches, they have free carbonates, have a pH of 7.8 to 9.0, or have an electrical conductivity of less than 4 millimhos per centimeter.

This group is suitable for farmstead, feedlot, and field windbreaks. The free carbonates and high reaction in the upper 12 inches affect the selection of trees and shrubs. Competition from weeds and grasses is an important limitation affecting the establishment and management of trees and shrubs.

Windbreak suitability group 6G.—The soils in this group are loamy or sandy, have more than 35 percent rock fragments, and are moderately well drained to excessively drained. Available water capacity to a depth of 60 inches is less than 5 inches.

This group is suitable for farmstead, feedlot, and field windbreaks. Competition from weeds and grasses is an important limitation affecting the establishment and management of trees and shrubs. A very low or low available water capacity affects the selection and rate of growth of trees and shrubs.

Windbreak suitability group 6R.—The soils in this group are moderately deep over bedrock. Available water capacity is less than 5 inches.

This group is suitable for farmstead, feedlot, and field windbreaks. A low or moderate available water capacity affects the selection and rate of growth of trees and shrubs. Competition from weeds and grasses is an important limitation affecting the establishment and management of trees and shrubs.

Windbreak suitability group 7.—The soils in this group are very deep or deep, are sandy throughout, and have less than 35 percent rock fragments.

This group is poorly suited to farmstead, feedlot, and field windbreaks. A low or moderate available water capacity affects the selection and rate of growth of trees and shrubs. Wind erosion at or near the planting site can adversely affect the health and vigor of developing windbreaks. Optimum growth and survival rates are not expected in this group.

Windbreak suitability group 8.—The soils in this group are loamy with less than 35 percent clay. Available water capacity to a depth of 60 inches or more is more than 7.5 inches. These soils are moderately well drained or well drained. In the upper 12 inches, they have free carbonates, have a pH of 7.8 to 9.0, or have an electrical conductivity of less than 4 millimhos per centimeter.

This group is suitable for farmstead, feedlot, and field windbreaks. The free carbonates and a high reaction affect the selection and rate of growth of trees and shrubs. Competition from weeds and grasses is an important limitation affecting the establishment and management of trees and shrubs.

Windbreak suitability group 9G.—The soils in this group are very deep or deep and have a water table within 5 feet of the surface. In some areas they are subject to flooding or ponding. In the upper 12 inches, they have a pH of greater than 7.8 and an electrical conductivity of 4 to 16 millimhos per centimeter.

This group is suitable for farmstead, feedlot, and field windbreaks. The high reaction and low or moderate salinity in the upper 12 inches affect the selection and rate of growth of trees and shrubs. Competition from weeds and grasses is an important limitation affecting the establishment and management of trees and shrubs. Planting may be delayed for a short period in spring because of wetness.

Windbreak suitability group 9N.—The soils in this group are very deep or deep, do not have a water table within 5 feet of the surface, and are not subject to flooding or ponding. In the upper 12 inches, they have a pH of greater than 7.8 and an electrical conductivity of 4 to 16 millimhos per centimeter.

This group is suitable for farmstead, feedlot, and field windbreaks. The high reaction, low or moderate salinity, and competition from weeds and grasses are important limitations affecting the establishment and management of trees and shrubs.

Windbreak suitability group 10.—The soils in this group have one or more characteristics which severely limit the planting, survival, or rate of growth of trees and shrubs. Examples are shallow or very shallow soils, soils that have a very low available water capacity, poorly drained or very poorly drained soils that are saturated or ponded throughout the growing season, and toxic soils.

The soils in this group are usually not recommended for farmstead, feedlot, and field windbreaks. However, onsite investigations may reveal that some tree and shrub plantings can be made with special treatments. The selection of species must be tailored to the soil conditions at the altered site.

The suitability for planting trees and shrubs in Wyoming is based on the tolerance of each plant species for the minimum and maximum air temperatures, on soil temperatures, and on data and observations collected from woody plant material trials and existing windbreaks.

Planting zone I includes areas of soils with a mean annual soil temperature of 47 to 59 degrees F.

Planting zone II includes areas of soils with a mean annual soil temperature of less than 47 degrees F, a mean summer soil temperature of more than 59 degrees F, and precipitation of less than 15 inches. In the winter this zone is characterized by frequent periods of cold, dry winds and soil surfaces that are frequently blown free of snow.

Planting zone III includes areas of soils with a mean annual soil temperature of less than 47 degrees F, a mean summer soil temperature of less than 59 degrees F, and precipitation of 15 inches or more. This zone is characterized by a snowpack throughout most of the winter.

Recreation

The soils of the survey area are rated in table 10 according to limitations that affect their suitability for recreation. The ratings are based on restrictive soil features, such as wetness, slope, and the texture of the surface layer. Susceptibility to flooding is considered. Not considered in the ratings, but important in evaluating a site, are the location and accessibility of the area, the size and shape of the area and its scenic quality, vegetation, access to water, potential water impoundment sites, and access to public sewer lines. The capacity of the soils to absorb septic tank effluent and the ability of the soils to support vegetation are also important. Soils subject to flooding are limited for recreational uses by the duration and intensity of flooding and the season when flooding occurs. In planning recreational facilities, onsite assessment of the height, duration, intensity, and frequency of flooding is essential.

In table 10, the degree of soil limitation is expressed as slight, moderate, or severe. *Slight* means that soil properties are generally favorable and that limitations are minor and easily overcome. *Moderate* means that limitations can be overcome or alleviated by planning, design, or special maintenance. *Severe* means that soil properties are unfavorable and that limitations can be offset only by costly soil reclamation, special design, intensive maintenance, limited use, or a combination of these measures.

The information in table 10 can be supplemented by other information in this survey, for example, interpretations for dwellings without basements and for local roads and streets in table 11 and interpretations for septic tank absorption fields in table 12.

Camp areas require site preparation, such as shaping and leveling the tent and parking areas, stabilizing roads and intensively used areas, and installing sanitary facilities and utility lines. Camp areas are subject to heavy foot traffic and some vehicular traffic. The best soils have mild slopes and are not wet or subject to flooding during the period of use. The surface has few or no stones or boulders, absorbs rainfall readily but remains firm, and is not dusty when dry. Strong slopes and stones or boulders can greatly increase the cost of constructing campsites.

Picnic areas are subject to heavy foot traffic. Most vehicular traffic is confined to access roads and parking areas. The best soils for picnic areas are firm when wet, are not dusty when dry, are not subject to flooding during the period of use, and do not have slopes or stones or boulders that increase the cost of shaping sites or of building access roads and parking areas.

Playgrounds require soils that can withstand intensive foot traffic. The best soils are almost level and are not wet or subject to flooding during the season of use. The surface is free of stones and boulders, is firm after rains, and is not dusty when dry. If grading is needed, the depth of the soils over bedrock or a hardpan should be considered.

Paths and trails for hiking and horseback riding should require little or no cutting and filling. The best soils are not wet, are firm after rains, are not dusty when dry, and are not subject to flooding more than once a year during the period of use. They have moderate slopes and few or no stones or boulders on the surface.

Wildlife Habitat

Richard Rintamaki, State Biologist, Natural Resources Conservation Service, Casper, Wyoming, assisted in the preparation of this section.

Soils influence wildlife populations primarily through the kinds of habitat they produce. Studies dating back to the 1940's show that wildlife productivity is directly related to soil fertility. The abundant populations of wildlife encountered by early settlers and planners were found on the best soils in a given ecological zone. While it is true that some species of wildlife can inhabit all lands (soils), it is also generally true that wildlife productivity is a function of the biotic potential of the soil. The quantity and quality of most vegetative wildlife habitat elements will not exceed the capability of the soil resource unless the elements are artificially supplied through intensive management systems.

Most kinds of wildlife habitat are created, improved, or maintained by planting suitable vegetation, by manipulating the existing vegetation, by inducing the natural establishment of desired plants, or by combinations of such measures. The behavior of soils can be predicted from knowledge of their properties. The growth habits and characteristics of plants that comprise wildlife habitat are affected by such behavior. From the appraisal of these vegetative habitat elements, the suitability of a site for various kinds of wildlife can be approximated.

The descriptions of the general soil map units include a list of representative wildlife species known to occur in the particular general soil map unit. Information about big game seasonal habitat was taken from the herd unit maps produced by the Game Division, Wyoming Game and Fish Department.

Information is provided in this report on the capability of soils to support irrigated and nonirrigated cultivated crops and native range plants. Also provided in this report are soil-windbreak and forestry interpretations. All of this information about existing and potential plant communities will enable the user who has data on wildlife habitat requirements to select sites for wildlife habitat management. The user will be able to determine the intensity of plant community management needed to produce satisfactory results.

Soils affect the kind and amount of vegetation that is available to wildlife as food and cover. They also affect the construction of water impoundments. The kind and abundance of wildlife depend largely on the amount and distribution of food, cover, and water.

Engineering

This section provides information for planning land uses related to urban development and to water management. Soils are rated for various uses, and the most limiting features are identified. Ratings are given for building site development, sanitary facilities, construction materials, and water management. The ratings are based on observed performance of the soils and on the estimated data and test data in the “Soil Properties” section.

Information in this section is intended for land use planning, for evaluating land use alternatives, and for planning site investigations prior to design and construction. The information, however, has limitations. For example, estimates and other data generally apply only to that part of the soil within a depth of 5 or 6 feet. Because of the map scale, small areas of different soils may be included within the mapped areas of a specific soil.

The information is not site specific and does not eliminate the need for onsite investigation of the soils or for testing and analysis by personnel experienced in the design and construction of engineering works.

Government ordinances and regulations that restrict certain land uses or impose specific design criteria were not considered in preparing the information in this section. Local ordinances and regulations should be considered in planning, in site selection, and in design.

Soil properties, site features, and observed performance were considered in determining the ratings in this section. During the fieldwork for this soil survey, determinations were made about grain-size distribution, liquid limit, plasticity index, soil reaction, the depth to bedrock, hardness of bedrock within 5 or 6 feet of the surface, soil wetness, the depth to a seasonal high water table, slope, likelihood of flooding, natural soil structure aggregation, and soil density. Data were collected about kinds of clay minerals, mineralogy of the sand and silt fractions, and the kind of adsorbed cations. Estimates were made for erodibility, permeability, corrosivity, shrink-swell potential, available water capacity, and other behavioral characteristics affecting engineering uses.

This information can be used to evaluate the potential of areas for residential, commercial, industrial, and recreational uses; make preliminary estimates of construction conditions; evaluate alternative routes for roads, streets, highways, pipelines, and underground cables; evaluate alternative sites for sanitary landfills, septic tank absorption fields, and sewage lagoons; plan detailed onsite investigations of soils and geology; locate potential sources of gravel, sand, earthfill, and topsoil; plan drainage systems, irrigation systems, ponds, terraces, and other structures for soil and water conservation; and predict performance of proposed small structures and pavements by comparing the performance of existing similar structures on the same or similar soils.

The information in the tables, along with the soil maps, the soil descriptions, and other data provided in this survey, can be used to make additional interpretations.

Some of the terms used in this soil survey have a special meaning in soil science and are defined in the Glossary.

Building Site Development

Table 11 shows the degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, local roads and streets, and lawns and landscaping. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required. Special feasibility studies may be required where the soil limitations are severe.

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for basements, graves, utility lines, open ditches, and other purposes. The ratings are based on soil properties, site features, and observed performance of the soils. The ease of digging, filling, and compacting is affected by the depth to bedrock, a cemented pan, or a very firm dense layer; stone content; soil texture; and slope. The time of the year that excavations can be made is affected by the depth to a seasonal high water table and the susceptibility of the soil to flooding. The resistance of the excavation walls or banks to sloughing or caving is affected by soil texture and the depth to the water table.

Dwellings and *small commercial buildings* are structures built on shallow foundations on undisturbed soil. The load limit is the same as that for single-family dwellings no higher than three stories. Ratings are made for small commercial buildings without basements, for dwellings with basements, and for dwellings without basements. The ratings are based on soil properties, site features, and observed performance of the soils. A high water table, flooding, shrinking and swelling, and organic layers can cause the movement of footings. A high water table, the depth to bedrock or to a cemented pan, large stones, slope, and flooding affect the ease of excavation and construction. Landscaping and grading that require cuts and fills of more than 5 or 6 feet are not considered.

Local roads and streets have an all-weather surface and carry automobile and light truck traffic all year. They have a subgrade of cut or fill soil material; a base of gravel, crushed rock, or stabilized soil material; and a flexible or rigid surface. Cuts and fills are generally limited to less than 6 feet. The ratings are based on soil properties, site features, and observed performance of the soils. The depth to bedrock or to a cemented pan, a high water table, flooding, large stones, and slope affect the ease of excavating and grading. Soil strength (as inferred from the engineering classification of the soil), shrink-swell potential, potential for frost action, and the depth to a high water table affect the traffic-supporting capacity.

Lawns and landscaping require soils on which turf and ornamental trees and shrubs can be established and maintained. The ratings are based on soil properties, site features, and observed performance of the soils. Soil reaction, a high water table, the depth to bedrock or to a cemented pan, the available water capacity in the upper 40 inches, and the content of salts, sodium, and sulfidic materials affect plant growth. Flooding, wetness, slope, stoniness, and the amount of sand, clay, or organic matter in the surface layer affect trafficability after vegetation is established.

Sanitary Facilities

Table 12 shows the degree and the kind of soil limitations that affect septic tank absorption fields, sewage lagoons, and sanitary landfills. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increases in construction costs, and possibly increased maintenance are required.

Table 12 also shows the suitability of the soils for use as daily cover for landfill. A rating of *good* indicates that soil properties and site features are favorable for the use and good performance and low maintenance can be expected; *fair* indicates that soil properties and site features are moderately favorable for the use and one or more soil properties or site features make the soil less desirable than the soils rated good; and *poor* indicates that one or more soil properties or site features are unfavorable for the use and overcoming the unfavorable properties requires special design, extra maintenance, or costly alteration.

Septic tank absorption fields are areas in which effluent from a septic tank is distributed into the soil through subsurface tiles or perforated pipe. Only that part of the soil between depths of 24 and 72 inches is evaluated. The ratings are based on soil properties, site features, and observed performance of the soils. Permeability, a high water table, the depth to bedrock or to a cemented pan, and flooding affect absorption of the effluent. Large stones and bedrock or a cemented pan interfere with installation.

Unsatisfactory performance of septic tank absorption fields, including excessively slow absorption of effluent, surfacing of effluent, and hillside seepage, can affect public health. Ground water can be polluted if highly permeable sand and gravel or fractured bedrock is less than 4 feet below the base of the absorption field, if slope is excessive, or if the water table is near the surface. There must be unsaturated soil material beneath the absorption field to filter the effluent effectively. Many local ordinances require that this material be of a certain thickness.

Sewage lagoons are shallow ponds constructed to hold sewage while aerobic bacteria decompose the solid and liquid wastes. Lagoons should have a nearly level floor surrounded by cut slopes or embankments of compacted soil. Lagoons generally are designed to hold the sewage within a depth of 2 to 5 feet. Nearly impervious soil material for the lagoon floor and sides is required to minimize seepage and contamination of ground water.

Table 12 gives ratings for the natural soil that makes up the lagoon floor. The surface layer and, generally, 1 or 2 feet of soil material below the surface layer are excavated to provide material for the embankments. The ratings are based on soil properties, site features, and observed performance of the soils. Considered in the ratings are slope, permeability, a high water table, the depth to bedrock or to a cemented pan, flooding, large stones, and the content of organic matter.

Excessive seepage resulting from rapid permeability in the soil or a water table that is high enough to raise the level of sewage in the lagoon causes a lagoon to function unsatisfactorily. Pollution results if seepage is excessive or if flood water overtops the lagoon. A high content of organic matter is detrimental to proper functioning of the lagoon because it inhibits aerobic activity. Slope, bedrock, and cemented pans can cause construction problems, and large stones can hinder compaction of the lagoon floor.

Sanitary landfills are areas where solid waste is disposed of by burying it in soil. There are two types of landfill—trench and area. In a trench landfill, the waste is placed in a trench. It is spread, compacted, and covered daily with a thin layer of soil excavated at the site. In an area landfill, the waste is placed in successive layers on the surface of the soil. The waste is spread, compacted, and covered daily with a thin layer of soil from a source away from the site.

Both types of landfill must be able to bear heavy vehicular traffic. Both types involve a risk of ground-water pollution. Ease of excavation and revegetation should be considered.

The ratings in table 12 are based on soil properties, site features, and observed performance of the soils. Permeability, the depth to bedrock or to a cemented pan, a high water table, slope, and flooding affect both types of landfill. Texture, stones and boulders, highly organic layers, soil reaction, and the content of salts and sodium affect trench landfills. Unless otherwise stated, the ratings apply only to that part of the soil within a depth of about 6 feet. For deeper trenches, a limitation rated slight or moderate may not be valid. Onsite investigation is needed.

Daily cover for landfill is the soil material that is used to cover compacted solid waste in an area sanitary landfill. The soil material is obtained offsite, transported to the landfill, and spread over the waste.

Soil texture, wetness, coarse fragments, and slope affect the ease of removing and spreading the material during wet and dry periods. Loamy or silty soils that are free of large stones or excess gravel are the best cover for a landfill. Clayey soils are sticky or cloddy and are difficult to spread; sandy soils are subject to wind erosion.

After soil material has been removed, the soil material remaining in the borrow area must be thick enough over bedrock, a cemented pan, or the water table to permit revegetation. The soil material used as the final cover for a landfill should be suitable for plants. The surface layer generally has the best workability, more organic matter, and the best potential for plants. Material from the surface layer should be stockpiled for use as the final cover.

Construction Materials

Table 13 gives information about the soils as a source of roadfill, sand, gravel, and topsoil. The soils are rated *good, fair,* or *poor* as a source of roadfill and topsoil. They are rated as a *probable* or *improbable* source of sand and gravel. The ratings are based on soil properties and site features that affect the removal of the soil and its use as construction material. Normal compaction, minor processing, and other standard construction practices are assumed. Each soil is evaluated to a depth of 5 or 6 feet.

Roadfill is soil material that is excavated in one place and used in road embankments in another place. In this table, the soils are rated as a source of roadfill for low embankments, generally less than 6 feet high and less exacting in design than higher embankments.

The ratings are for the soil material below the surface layer to a depth of 5 or 6 feet. It is assumed that soil layers will be mixed during excavating and spreading. Many soils have layers of contrasting suitability within their profile. The table showing engineering index properties provides detailed information about each soil layer. This information can help to determine the suitability of each layer for use as roadfill. The performance of soil after it is stabilized with lime or cement is not considered in the ratings.

The ratings are based on soil properties, site features, and observed performance of the soils. The thickness of suitable material is a major consideration. The ease of excavation is affected by large stones, a high water table, and slope. How well the soil performs in place after it has been compacted and drained is determined by its strength (as inferred from the engineering classification of the soil) and the shrink-swell potential.

Soils rated *good* contain significant amounts of sand or gravel or both. They have at least 5 feet of suitable material, a low shrink-swell potential, few cobbles and stones, and slopes of 15 percent or less. The depth to the water table is more than 3 feet. Soils rated *fair* are more than 35 percent silt- and clay-sized particles and have a plasticity index of less than 10. They have a moderate shrink-swell potential, slopes of 15 to 25 percent, or many stones. The depth to the water table is 1 to 3 feet. Soils rated *poor* have a plasticity index of more than 10, a high shrink-swell potential, many stones, or slopes of more than 25 percent. They are wet and have a water table at a depth of less than 1 foot. They may have layers of suitable material, but the material is less than 3 feet thick.

Sand and *gravel* are natural aggregates suitable for commercial use with a minimum of processing. They are used in many kinds of construction. Specifications for each use vary widely. In table 13, only the probability of finding material in suitable quantity is evaluated. The suitability of the material for specific purposes is not evaluated, nor are factors that affect excavation of the material.

The properties used to evaluate the soil as a source of sand or gravel are gradation of grain sizes (as indicated by the engineering classification of the soil), the thickness of suitable material, and the content of rock fragments. Kinds of rock, acidity, and stratification are given in the soil series descriptions. Gradation of grain sizes is given in the table on engineering index properties.

A soil rated as a probable source has a layer of clean sand or gravel or a layer of sand or gravel that is as much as 12 percent silty fines. This material must be at least 3 feet thick and less than 50 percent, by weight, large stones. All other soils are rated as an improbable source. Coarse fragments of soft bedrock, such as shale and siltstone, are not considered to be sand and gravel.

Topsoil is used to cover an area so that vegetation can be established and maintained. The upper 40 inches of a soil is evaluated for use as topsoil. Also evaluated is the reclamation potential of the borrow area.

Plant growth is affected by toxic material and by such properties as soil reaction, available water capacity, and fertility. The ease of excavating, loading, and spreading is affected by rock fragments, slope, a water table, soil texture, and thickness of suitable material. Reclamation of the borrow area is affected by slope, a water table, rock fragments, bedrock, and toxic material.

Soils rated *good* have friable, loamy material to a depth of at least 40 inches. They are free of stones and cobbles, have little or no gravel, and have slopes of less than 8 percent. They are low in content of soluble salts, are naturally fertile or respond well to fertilizer, and are not so wet that excavation is difficult.

Soils rated *fair* are sandy soils, loamy soils that have a relatively high content of clay, soils that have only 20 to 40 inches of suitable material, soils that have an appreciable amount of gravel, stones, or soluble salts, or soils that have slopes of 8 to 15 percent. The soils are not so wet that excavation is difficult.

Soils rated *poor* are very sandy or clayey, have less than 20 inches of suitable material, have a large amount of gravel, stones, or soluble salts, have slopes of more than 15 percent, or have a seasonal high water table at or near the surface.

The surface layer of most soils is generally preferred for topsoil because of its organic matter content. Organic matter greatly increases the absorption and retention of moisture and nutrients for plant growth.

Water Management

Table 14 gives information on the soil properties and site features that affect water management. The degree and kind of soil limitations are given for pond reservoir areas; embankments, dikes, and levees; and aquifer-fed excavated ponds. The limitations are considered *slight* if soil properties and site features are generally favorable for the indicated use and limitations are minor and are easily overcome; *moderate* if soil properties or site features are not favorable for the indicated use and special planning, design, or maintenance is needed to overcome or minimize the limitations; and *severe* if soil properties or site features are so unfavorable or so difficult to overcome that special design, significant increase in construction costs, and possibly increased maintenance are required.

This table also gives for each soil the restrictive features that affect drainage, irrigation, and grassed waterways.

Pond reservoir areas hold water behind a dam or embankment. Soils best suited to this use have low seepage potential in the upper 60 inches. The seepage potential is determined by the permeability of the soils and the depth to fractured bedrock or other permeable material. Excessive slope can affect the storage capacity of the reservoir area.

Embankments, dikes, and levees are raised structures of soil material, generally less than 20 feet high, constructed to impound water or to protect land against overflow. In this table, the soils are rated as a source of material for embankment fill. The ratings apply to the soil material below the surface layer to a depth of about 5 feet. It is assumed that soil layers will be uniformly mixed and compacted during construction.

The ratings do not indicate the ability of the natural soil to support an embankment. Soil properties to a depth even greater than the height of the embankment can affect performance and safety of the embankment. Generally, deeper onsite investigation is needed to determine these properties.

Soil material in embankments must be resistant to seepage, piping, and erosion and have favorable compaction characteristics. Unfavorable features include less than 5 feet of suitable material and a high content of stones or boulders, organic matter, or salts or sodium. A high water table affects the amount of usable material. It also affects trafficability.

Aquifer-fed excavated ponds are pits or dugouts that extend to a ground-water aquifer or to a depth below a permanent water table. Excluded are ponds that are fed only by surface runoff and embankment ponds that impound water 3 feet or more above the original surface. Excavated ponds are affected by the depth to a permanent water table, permeability of the aquifer, and quality of the water as inferred from the salinity of the soil. The depth to bedrock and the content of large stones affect the ease of excavation.

Drainage is the removal of excess surface and subsurface water from the soil. How easily and effectively the soil is drained depends on the depth to bedrock, to a cemented pan, or to other layers that affect the rate of water movement; permeability; the depth to a high water table or depth of standing water if the soil is subject to ponding; slope; susceptibility to flooding; subsidence of organic layers; and the potential for frost action. Excavating and grading and the stability of ditch banks are affected by the depth to bedrock or to a cemented pan, large stones, slope, and the hazard of cutbanks caving. The productivity of the soil after drainage is adversely affected by extreme acidity or by toxic substances in the root zone, such as salts, sodium, and sulfur. Availability of drainage outlets is not considered in the ratings.

Irrigation is the controlled application of water to supplement rainfall and support plant growth. The design and management of an irrigation system are affected by the depth to the water table, the need for drainage, flooding, available water capacity, intake rate, permeability, erosion hazard, and slope. The construction of a system is affected by large stones and the depth to bedrock or to a cemented pan. The performance of a system is affected by the depth of the root zone, the amount of salts or sodium, and soil reaction.

Grassed waterways are natural or constructed channels, generally broad and shallow, that conduct surface water to outlets at a nonerosive velocity. Large stones, wetness, slope, and the depth to bedrock or to a cemented pan affect the construction of grassed waterways. A hazard of wind erosion, low available water capacity, restricted rooting depth, toxic substances such as salts or sodium, and restricted permeability adversely affect the growth and maintenance of the grass after construction.

Soil Properties

Data relating to soil properties are collected during the course of the soil survey. The data and the estimates of soil and water features listed in tables are explained on the following pages.

Soil properties are determined by field examination of the soils and by laboratory index testing of some benchmark soils. Established standard procedures are followed. During the survey, many shallow borings are made and examined to identify and classify the soils and to delineate them on the soil maps. Samples are taken from some typical profiles and tested in the laboratory to determine grain-size distribution, plasticity, and compaction characteristics.

Estimates of soil properties are based on field examinations, on laboratory tests of samples from the survey area, and on laboratory tests of samples of similar soils in nearby areas. Tests verify field observations, verify properties that cannot be estimated accurately by field observation, and help to characterize key soils.

The estimates of soil properties shown in the tables include the range of grain-size distribution and Atterberg limits, the engineering classification, and the physical and chemical properties of the major layers of each soil. Pertinent soil and water features also are given.

Engineering Index Properties

Table 15 gives estimates of the engineering classification and of the range of index properties for the major layers of each soil in the survey area. Most soils have layers of contrasting properties within the upper 5 or 6 feet.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under the heading "Soil Series and Their Morphology."

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is as much as 15 percent, an appropriate modifier is added, for example, "gravelly." Textural terms are defined in the Glossary.

Classification of the soils is determined according to the Unified soil classification system (ASTM, 1993) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 1986).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to grain-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of grain-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in the 0content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

The estimates of grain-size distribution, liquid limit, and plasticity index are generally rounded to the nearest 5 percent. Thus, if the ranges of gradation and Atterberg limits extend a marginal amount (1 or 2 percentage points) across classification boundaries, the classification in the marginal zone is omitted in the table.

Physical and Chemical Properties

Table 16 shows estimates of some characteristics and features that affect soil behavior. These estimates are given for the major layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated. The range in depth and information on other properties of each layer are given for each soil series under "Soil Series and Their Morphology."

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each major soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The amount and kind of clay greatly affect the fertility and physical condition of the soil. They determine the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, permeability, plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (ovendry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at $^1/_3$-bar moisture tension. Weight is determined after drying the soil at 105 degrees C. In this table, the estimated moist bulk density of each major soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots. A bulk density of more than 1.6 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, the content of organic matter, and soil structure.

Permeability refers to the ability of a soil to transmit water or air. The estimates indicate the rate of downward movement of water when the soil is saturated. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Permeability is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each major soil layer. The capacity varies, depending on soil properties that affect the retention of water and the depth of the root zone. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Soil reaction is a measure of acidity or alkalinity and is expressed as a range in pH values. The range in pH of each major horizon is based on many field tests. For many soils, values have been verified by laboratory analyses. Soil reaction is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of the soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Shrink-swell potential is the potential for volume change in a soil with a loss or gain in moisture. Volume change occurs mainly because of the interaction of clay minerals with water and varies with the amount and type of clay minerals in the soil. The size of the load on the soil and the magnitude of the change in soil moisture content influence the amount of swelling of soils in place. Laboratory measurements of swelling of undisturbed clods were made for many soils. For others, swelling was estimated on the basis of the kind and amount of clay minerals in the soil and on measurements of similar soils.

If the shrink-swell potential is rated moderate to very high, shrinking and swelling can cause damage to buildings, roads, and other structures. Special design is often needed.

Shrink-swell potential classes are based on the change in length of an unconfined clod as moisture content is increased from air-dry to field capacity. The classes are *low*, a change of less than 3 percent; *moderate*, 3 to 6 percent; and *high*, more than 6 percent. *Very high*, greater than 9 percent, is sometimes used.

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, very fine sand, sand, and organic matter (up to 4 percent) and on soil structure and permeability. The estimates are modified by the presence of rock fragments. Values of K range from 0.02 to 0.69. The higher the value the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their resistance to wind erosion in cultivated areas. The groups indicate the susceptibility of soil to wind erosion. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. Soils are grouped according to the following distinctions:

1. Coarse sands, sands, fine sands, and very fine sands. These soils are generally not suitable for crops. They are extremely erodible, and vegetation is difficult to establish.

2. Loamy coarse sands, loamy sands, loamy fine sands, loamy very fine sands, ash material, and sapric soil material. These soils are very highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

3. Coarse sandy loams, sandy loams, fine sandy loams, and very fine sandy loams. These soils are highly erodible. Crops can be grown if intensive measures to control wind erosion are used.

4L. Calcareous loams, silt loams, clay loams, and silty clay loams. These soils are erodible. Crops can be grown if intensive measures to control wind erosion are used.

4. Clays, silty clays, noncalcareous clay loams, and silty clay loams that are more than 35 percent clay. These soils are moderately erodible. Crops can be grown if measures to control wind erosion are used.

5. Noncalcareous loams and silt loams that are less than 20 percent clay and sandy clay loams, sandy clays, and hemic soil material. These soils are slightly erodible. Crops can be grown if measures to control wind erosion are used.

6. Noncalcareous loams and silt loams that are more than 20 percent clay and noncalcareous clay loams that are less than 35 percent clay. These soils are very slightly erodible. Crops can be grown if ordinary measures to control wind erosion are used.

7. Silts, noncalcareous silty clay loams that are less than 35 percent clay, and fibric soil material. These soils are very slightly erodible. Crops can be grown if ordinary measures to control wind erosion are used.

8. Soils that are not subject to wind erosion because of rock fragments on the surface or because of surface wetness.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In table 16, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of organic matter in a soil can be maintained or increased by returning crop residue to the soil. Organic matter affects the available water capacity, infiltration rate, and tilth. It is a source of nitrogen and other nutrients for crops.

Soil and Water Features

Table 17 gives estimates of various soil and water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are used to estimate runoff from precipitation. Soils not protected by vegetation are assigned to one of four groups. They are grouped according to the infiltration of water when the soils are thoroughly wet and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Flooding, the temporary inundation of an area, is caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, nor is water in swamps and marshes.

Table 17 gives the frequency and duration of flooding and the time of year when flooding is most likely.

Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, common, occasional, and frequent. *None* means that flooding is not probable; *rare* that it is unlikely but possible under unusual weather conditions (the chance of flooding is nearly 0 percent to 5 percent in any year); *occasional* that it occurs, on the average, once or less in 2 years (the chance of flooding is 5 to 50 percent in any year); and *frequent* that it occurs, on the average, more than once in 2 years (the chance of flooding is more than 50 percent in any year). *Common* is used when the occasional and frequent classes are grouped for certain purposes. Duration is expressed as *very brief* if less than 2 days, *brief* if 2 to 7 days, and *long* if more than 7 days. Probable dates are expressed in months; November-May, for example, means that flooding can occur during the period November through May. About two-thirds to three-fourths of all flooding occurs during the stated period.

The information is based on evidence in the soil profile, namely thin strata of gravel, sand, silt, or clay deposited by floodwater; irregular decrease in organic matter content with increasing depth; and little or no horizon development.

Also considered are local information about the extent and levels of flooding and the relation of each soil on the landscape to historic floods. Information on the extent of flooding based on soil data is less specific than that provided by detailed engineering surveys that delineate flood-prone areas at specific flood frequency levels.

High water table (seasonal) is the highest level of a saturated zone in the soil in most years. The estimates are based mainly on observations of the water table at selected sites and on the evidence of a saturated zone, namely grayish colors or mottles (redoximorphic features) in the soil. Indicated in table 17 are the depth to the seasonal high water table; the kind of water table—that is, perched or apparent; and the months of the year that the water table commonly is high. A water table that is seasonally high for less than 1 month is not indicated in table 17.

An *apparent* water table is a thick zone of free water in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Only saturated zones within a depth of about 6 feet are indicated. A plus sign preceding the range in depth indicates that the water table is above the surface of the soil. The first numeral in the range indicates how high the water rises above the surface. The second numeral indicates the depth below the surface.

Depth to bedrock is given if bedrock is within a depth of 5 feet. The depth is based on many soil borings and on observations during soil mapping. The rock is specified as either soft or hard. If the rock is soft or fractured, excavations can be made with trenching machines, backhoes, or small rippers. If the rock is hard or massive, blasting or special equipment generally is needed for excavation.

Potential frost action is the likelihood of upward or lateral expansion of the soil caused by the formation of segregated ice lenses (frost heave) and the subsequent collapse of the soil and loss of strength on thawing. Frost action occurs when moisture moves into the freezing zone of the soil. Temperature, texture, density, permeability, the content of organic matter, and the depth to the water table are the most important factors considered in evaluating the potential for frost action. It is assumed that the soil is not insulated by vegetation or snow and is not artificially drained. Silty and highly structured clayey soils that have a high water table in winter are the most susceptible to frost action. Well drained, very gravelly, or very sandy soils are the least susceptible. Frost heave and low soil strength during thawing cause damage mainly to pavements and other rigid structures.

Risk of corrosion pertains to potential soil-induced electrochemical or chemical action that dissolves or weakens uncoated steel or concrete. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than steel in installations that are entirely within one kind of soil or within one soil layer.

For uncoated steel, the risk of corrosion, expressed as *low, moderate,* or *high,* is based on soil drainage class, total acidity, electrical resistivity near field capacity, and electrical conductivity of the saturation extract.

For concrete, the risk of corrosion is also expressed as *low, moderate,* or *high.* It is based on soil texture, acidity, and amount of sulfates in the saturation extract.

Classification of the Soils

The system of soil classification used by the National Cooperative Soil Survey has six categories (U.S. Dep. Agric., 1975). Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. Classification is based on soil properties observed in the field or inferred from those observations or from laboratory measurements. Table 18 shows the classification of the soils in the survey area. The categories are defined in the following paragraphs.

ORDER. Eleven soil orders are recognized. The differences among orders reflect the dominant soil-forming processes and the degree of soil formation. Each order is identified by a word ending in *sol.* An example is Aridisol.

SUBORDER. Each order is divided into suborders primarily on the basis of properties that influence soil genesis and are important to plant growth or properties that reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Argid (*Arg,* meaning presence of a agrillic horizon, plus *id,* from Aridisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of development of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and by a prefix that indicates a property of the soil. An example is Haplargids (*Hapl,* meaning minimal horizonation, plus *argid,* the suborder of the Aridisols that has an agrillic horizon).

SUBGROUP. Each great group has a typic subgroup. Other subgroups are intergrades or extragrades. The typic is the central concept of the great group; it is not necessarily the most extensive. Intergrades are transitions to other orders, suborders, or great groups. Extragrades have some properties that are not representative of the great group but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceding the name of the great group. The adjective *Ustollic* identifies the subgroup that is moister than that which typifies the great group. An example is Ustollic Haplargids.

FAMILY. Families are established within a subgroup on the basis of physical and chemical properties and other characteristics that affect management. Generally, the properties are those of horizons below plow depth where there is much biological activity. Among the properties and characteristics considered are particle-size class, mineral content, temperature regime, depth of the root zone, consistence, moisture equivalent, slope, and permanent cracks. A family name consists of the name of a subgroup preceded by terms that indicate soil properties. An example is fine-loamy, mixed, mesic Ustollic Haplargids.

SERIES. The series consists of soils within a family that have horizons similar in color, texture, structure, reaction, consistence, mineral and chemical composition, and arrangement in the profile. The texture of the surface layer or of the substratum can differ within a series. The Forkwood series is an example of a fine-loamy, mixed, mesic Ustollic Haplargid.

Soil Series and Their Morphology

In this section, each soil series recognized in the survey area is described. The descriptions are arranged in alphabetic order.

Characteristics of the soil and the material in which it formed are identified for each series. A pedon, a small three-dimensional area of soil, that is typical of the series in the survey area is described. The detailed description of each soil horizon follows standards in the "Soil Survey Manual" (U.S. Dep. Agric., 1993). Many of the technical terms used in the descriptions are defined in "Soil Taxonomy" (U.S. Dep. Agric, 1975). Unless otherwise stated, matrix colors in the descriptions are for dry soil. Following the pedon description is the range of important characteristics of the soils in the series.

The map units of each soil series are described in the section "Detailed Soil Map Units."

Absher Series

The Absher series consists of very deep, well drained soils on low terraces. These soils formed in alluvium derived dominantly from sodic shale. Slope ranges from 0 to 3 percent. Elevation is 6,000 to 6,200 feet. The average annual precipitation is 10 to 14 inches, the average annual temperature is 41 to 43 degrees F, and the frost-free period is 100 to 110 days.

Typical pedon of Absher loam, 0 to 3 percent slopes, 2,400 feet south and 55 feet east of the northwest corner of sec. 35, T. 29 N., R. 88 W.

E—0 to 3 inches; very pale brown (10YR 7/3) loam, dark brown (10YR 4/3) moist; moderate medium platy structure; hard, friable, sticky and plastic; many fine roots; many fine vesicular pores; slightly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

Btn1—3 to 7 inches; pale brown (10YR 6/3) silty clay, brown (10YR 5/3) moist; strong medium columnar structure; hard, firm, sticky and plastic; many fine roots; many fine vesicular pores; many distinct clay films on vertical faces of peds; strongly effervescent; disseminated calcium carbonate; very strongly alkaline; clear wavy boundary.

Btn2—7 to 19 inches; pale brown (10YR 6/3) silty clay, brown (10YR 5/3) moist; strong medium prismatic structure parting to strong medium angular blocky; hard, firm, very sticky and very plastic; common fine roots; many distinct clay films on faces of peds; violently effervescent; disseminated calcium carbonate; very strongly alkaline; clear wavy boundary.

Bky—19 to 60 inches; pale brown (10YR 6/3) silty clay loam, brown (10YR 5/3) moist; massive; hard, firm, sticky and plastic; violently effervescent; calcium carbonate is disseminated and also occurs as soft masses and threads; common fine soft masses and threads of gypsum; strongly alkaline.

The hue is 10YR or 2.5Y throughout the profile. The Btn horizon has a texture of silty clay or clay and is 40 to 55 percent clay. The Bky horizon has a texture of silty clay loam, silty clay, clay loam, or clay and is 35 to 50 percent clay. Exchangeable sodium ranges from 20 to 50 percent in the Btn horizon and 25 to 50 percent in the Bky horizon. Reaction is strongly alkaline or very strongly alkaline in the Btn and Bky horizons.

Absted Series

The Absted series consists of very deep, well drained soils on alluvial fans and low terraces. These soils formed in alluvium derived dominantly from sodic shale. Slope ranges from 0 to 6 percent. Elevation is 5,000 to 6,300 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Absted clay loam in an area of Arvada-Absted-Slickspots complex, 0 to 6 percent slopes, 880 feet north and 830 feet west of the southeast corner of sec. 24, T. 36 N., R. 84 W.

A—0 to 2 inches; light brownish gray (2.5Y 6/2) clay loam, dark grayish brown (2.5Y 4/2) moist; strong fine granular structure; slightly hard, friable, sticky and plastic; many fine roots; neutral; clear smooth boundary.

Bt—2 to 12 inches; light olive brown (2.5Y 5/4) clay, olive brown (2.5Y 4/4) moist; strong medium prismatic structure parting to moderate coarse angular blocky; extremely hard, very firm, very sticky and very plastic; many fine and few medium roots; many prominent clay films on faces of peds; moderately alkaline; clear smooth boundary.

Btkn—12 to 16 inches; light brownish gray (2.5Y 6/2) clay, olive brown (2.5Y 4/4) moist; moderate medium prismatic structure parting to moderate coarse angular blocky; very hard, firm, sticky and plastic; few fine and medium roots; many distinct clay films on faces of peds; strongly effervescent; disseminated calcium carbonate; strongly alkaline; clear smooth boundary.

Bkn—16 to 27 inches; light brownish gray (2.5Y 6/2) clay loam, dark grayish brown (2.5Y 4/2) moist; massive; hard, friable, sticky and plastic; violently effervescent; disseminated calcium carbonate; very strongly alkaline; clear smooth boundary.

By—27 to 39 inches; grayish brown (2.5Y 5/2) clay loam, dark grayish brown (2.5Y 4/2) moist; massive; hard, friable, sticky and plastic; strongly effervescent; disseminated calcium carbonate; common fine threads of gypsum; strongly alkaline; clear smooth boundary.

C—39 to 60 inches; grayish brown (2.5Y 5/2) clay loam, dark grayish brown (2.5Y 4/2) moist; massive; hard, friable, sticky and plastic; strongly effervescent; disseminated calcium carbonate; strongly alkaline.

The hue is 10YR or 2.5Y throughout the profile. The A horizon has a neutral or slightly alkaline reaction. The Bt, By, and C horizons have a moderately alkaline or strongly alkaline reaction. The Btkn horizon has a strongly alkaline or very strongly alkaline reaction. The B and C horizons have a texture of clay loam or clay. Some pedons do not have a By horizon. Some pedons do not have a C horizon above a depth of 60 inches.

Adel Series

The Adel series consists of very deep, well drained soils in narrow mountain valleys. These soils formed in slopewash alluvium and colluvium derived from various sources. Slope ranges from 4 to 15 percent. Elevation is 7,200 to 7,700 feet. The annual precipitation is 20 to 30 inches, the annual temperature is 35 to 38 degrees F, and the frost-free period is less than 90 days. Frost is common in the summer months.

Typical pedon of Adel loam in an area of Adel-Pagosa association, rolling, 2,530 feet west and 1,900 feet south of the northeast corner of sec. 6, T. 30 N., R. 77 W.

A1—0 to 5 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; neutral; clear smooth boundary.

A2—5 to 21 inches; dark brown (10YR 4/3) clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and plastic; many fine and medium roots; neutral; gradual wavy boundary.

AC—21 to 27 inches; pale brown (10YR 6/3) clay loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and plastic; common fine and medium roots; slightly alkaline; gradual wavy boundary.

C—27 to 60 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; massive; hard, friable, slightly sticky and plastic; few medium roots; slightly alkaline.

The A2, AC, and C horizons have a texture of loam or clay loam and are 18 to 30 percent clay. The content of gravel, cobbles, and stones ranges from 5 to 15 percent in the A horizon and from 5 to 25 percent in the C horizon. The part of the C horizon below a depth of 40 inches is effervescent in a few pedons.

Alcova Series

The Alcova series consists of very deep, well drained soils on terraces and alluvial fans. These soils formed in alluvium derived from various sources. Slope ranges from 0 to 15 percent. Elevation is 5,800 to 7,200 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 38 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Alcova fine sandy loam in an area of Bosler-Alcova complex, 2 to 10 percent slopes, 720 feet west and 890 feet south of the northeast corner of sec. 12, T. 29 N., R. 83 W.

A—0 to 5 inches; light brownish gray (10YR 6/2) fine sandy loam, grayish brown (10YR 5/2) moist; weak medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots; neutral; abrupt smooth boundary.

Bt—5 to 12 inches; pale brown (10YR 6/3) sandy clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; very hard, friable, sticky and plastic; common fine and medium roots; common faint clay films on faces of peds; slightly alkaline; abrupt smooth boundary.

Btk—12 to 17 inches; very pale brown (10YR 7/3) sandy clay loam, brown (10YR 5/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; very hard, friable, sticky and plastic; common fine and medium roots; few faint clay films on faces of peds; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk1—17 to 30 inches; very pale brown (10YR 8/3) gravelly loam, very pale brown (10YR 7/3) moist; massive; hard, very friable, slightly sticky and slightly plastic; violently effervescent; calcium carbonate is disseminated and also occurs as moderately thick coatings on undersides of rock fragments; 25 percent gravel; moderately alkaline; diffuse wavy boundary.

Bk2—30 to 60 inches, white (10YR 8/2) very gravelly sandy loam, light brownish gray (10YR 6/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; strongly effervescent; calcium carbonate is disseminated and also occurs as moderately thick coatings on undersides of rock fragments; 40 percent gravel and 10 percent cobbles; moderately alkaline.

The A horizon has a texture of fine sandy loam, sandy loam, or loam. It has a neutral or slightly alkaline reaction. The Bt horizon has a texture of sandy clay loam or gravelly sandy clay loam. It is 5 to 35 percent rock fragments. The texture of the Bk horizon is gravelly loam or gravelly sandy loam. The Bk and 2Bk horizons have hue of 10YR or 2.5Y. Some pedons do not have Bk horizons.

In some pedons the texture of the 2Bk horizon is very gravelly loam or very gravelly sandy loam to a depth of 60 inches or more. In other pedons the texture below a depth of about 30 inches is very gravelly sand or very gravelly coarse sand. Reaction in the 2Bk horizon is moderately alkaline or strongly alkaline. The calcium carbonate equivalent in this horizon is 8 to 25 percent.

Alflack Series

The Alflack series consists of moderately deep, well drained soils on mountain slopes. These soils formed in residuum derived from sandstone. Slope ranges from 4 to 25 percent. Elevation is 7,200 to 8,300 feet. The annual precipitation is 25 to 35 inches, the annual temperature is 32 to 36 degrees F, and the frost-free period is less than 90 days. Frost is common in the summer months.

Typical pedon of Alflack loamy fine sand in an area of Alflack-Foxton complex, 4 to 25 percent, 500 feet east and 400 feet north of the southwest corner of sec. 14, T. 32 N., R. 79 W.

Oi—1 inch to 0; slightly decomposed pine needles and other forest litter.

A—0 to 2 inches; light brownish gray (10YR 6/2) loamy fine sand, dark grayish brown (10YR 4/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common fine, medium, and coarse roots; moderately acid; clear wavy boundary.

C—2 to 22 inches; brownish yellow (10YR 6/6) very channery loamy fine sand, yellowish brown (10YR 5/6) moist; massive; soft, very friable, nonsticky and nonplastic; common medium and few fine roots; 35 percent sandstone channery fragments and 10 percent sandstone flagstones; slightly acid; clear wavy boundary.

R—22 inches; fractured sandstone which can be broken and removed with a spade.

The depth to fractured sandstone bedrock is 20 to 40 inches. Reaction is moderately acid to neutral throughout the profile. Rock fragments throughout the profile are mainly sandstone channery fragments and flagstones. The A horizon has a texture of loamy fine sand or flaggy sandy loam. It is 5 to 30 percent rock fragments. The C horizon has a fine-earth texture of loamy fine sand or loamy sand. It is 40 to 60 percent rock fragments.

Almy Series

The Almy series consists of very deep, well drained soils on hillslopes. These soils formed in slopewash alluvium derived dominantly from sandstone and shale. Slope ranges from 3 to 15 percent. Elevation is 7,100 to 7,400 feet. The average annual precipitation is 12 to 14 inches, the average annual temperature is 38 to 40 degrees F, and the frost-free period is 90 to 100 days.

Typical pedon of Almy loam, 3 to 15 percent slopes, 2,520 feet east and 770 feet north of the southwest corner of sec. 34, T. 32 N., R. 79 W.

A—0 to 3 inches; reddish brown (5YR 5/3) loam, reddish brown (5YR 4/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; neutral; clear smooth boundary.

Bt1—3 to 12 inches; reddish brown (5YR 5/4) loam, reddish brown (5YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; common faint clay films of faces of peds; slightly alkaline; clear smooth boundary.

Bt2—12 to 22 inches; reddish brown (5YR 5/4) clay loam, reddish brown (5YR 4/4) moist; strong medium prismatic structure parting to strong medium angular blocky; hard, firm, sticky and plastic; common fine roots; many distinct clay films on faces of peds; slightly alkaline; gradual wavy boundary.

Bk—22 to 35 inches; light reddish brown (5YR 6/4) loam, reddish brown (5YR 5/4) moist; weak medium prismatic structure parting to weak medium subangular blocky; hard, friable, slightly sticky and slightly plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as common fine soft masses and seams; moderately alkaline; gradual wavy boundary.

C—35 to 60 inches; light reddish brown (5YR 6/4) loam, reddish brown (5YR 5/4) moist; massive; hard, friable, slightly sticky and slightly plastic; violently effervescent; disseminated calcium carbonate; moderately alkaline.

The content of rock fragments throughout the profile ranges from 0 to 15 percent. The rock fragments are mainly gravel. The A horizon has hue of 5YR or 7.5YR. It has a neutral or slightly alkaline reaction. The Bt horizon has a texture of loam or clay loam and is 24 to 35 percent clay. It has a slightly alkaline or moderately alkaline reaction. The Bk and C horizons have a moderately alkaline or strongly alkaline reaction. Some pedons have a few soft masses and seams of gypsum in the C horizon.

Amodac Series

The Amodac series consists of very deep, well drained soils on hillslopes. These soils formed in slopewash alluvium and residuum derived from sodic shale. Slope ranges from 2 to 12 percent. Elevation is 5,000 to 6,100 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Amodac fine sandy loam in a area of Amodac-Keyner complex, 2 to 10 percent slopes, 1,700 feet east and 2,400 feet north of the southwest corner of sec. 21, T. 36 N., R. 85 W.

A—0 to 4 inches; pale brown (10YR 6/3) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

BA—4 to 7 inches; yellowish brown (10YR 5/4) sandy clay loam, dark grayish brown (10YR 4/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bw—7 to 15 inches; light brownish gray (2.5Y 6/2) loam, dark grayish brown (2.5Y 4/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, slightly sticky and slightly plastic; few fine roots; strongly effervescent; calcium carbonate is disseminated and also occurs as common distinct coatings on faces of peds; strongly alkaline; clear wavy boundary.

Bn—15 to 21 inches; light brownish gray (2.5Y 6/2) loam, dark grayish brown (2.5Y 4/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, slightly sticky and slightly plastic; few fine roots; strongly effervescent; calcium carbonate is disseminated and also occurs as common distinct coatings on faces of peds; very strongly alkaline; clear wavy boundary.

Bkn—21 to 26 inches; grayish brown (2.5Y 5/2) sandy clay loam, dark grayish brown (2.5Y 4/2) moist; massive; hard, friable, slightly sticky and slightly plastic; violently effervescent; calcium carbonate is disseminated and also occurs as common medium soft masses; very strongly alkaline; gradual wavy boundary.

C—26 to 60 inches; grayish brown (2.5Y 5/2) sandy clay loam, dark grayish brown (2.5Y 4/2) moist; weak medium platy shale rock structure; hard, friable, slightly sticky and slightly plastic; violently effervescent; calcium carbonate is disseminated and also occurs as few filaments and soft masses between rock structure plates and inherited from the parent material; very strongly alkaline.

The hue is 10YR or 2.5Y throughout the profile. A vesicular crust occurs on the surface of some pedons. The A horizon has a texture of fine sandy loam or loam. The B and C horizons have a texture of loam, clay loam, or sandy clay loam. They are 20 to 35 percent clay and are 15 to 35 percent fine sand and coarser sand.

The A and Bw horizons have a moderately alkaline or strongly alkaline reaction. The Bn horizon has 15 to 30 percent exchangeable sodium and an electrical conductivity of 2 to 4 millimhos per centimeter. The C horizon has an electrical conductivity of 4 to 16 millimhos per centimeter. This horizon has a strongly alkaline or very strongly alkaline reaction. The C horizon commonly has soft masses of calcium carbonate, gypsum, and more soluble salts inherited from the parent material.

Aquic Ustifluvents

Aquic Ustifluvents are very deep and somewhat poorly drained. They are on flood plains and in basins. These soils formed in alluvium derived from various sources. Slope ranges from 0 to 3 percent. Elevation is 5,200 to 6,700 feet. The annual precipitation is 7 to 14 inches, the annual temperature is 41 to 49 degrees F, and the frost-free period is 100 to 130 days.

Reference pedon of Aquic Ustifluvents, 0 to 3 percent slopes, NW1/4NW1/4 sec. 3, T. 37 N., R. 89 W.

Oi—1 inch to 0; slightly decomposed plant fibers, mainly roots.

A—0 to 3 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; weak medium granular structure; soft, friable, slightly sticky and slightly plastic; many medium roots; moderately alkaline; clear smooth boundary.

Bw—3 to 6 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; weak fine angular blocky structure; hard, firm, sticky and plastic; many medium roots; slightly effervescent; disseminated calcium carbonate; strongly alkaline; clear smooth boundary.

Cz—6 to 14 inches; grayish brown (10YR 5/2) clay loam, dark grayish brown (10YR 4/2) moist; massive; hard, firm, sticky and plastic; common medium roots; slightly effervescent; disseminated calcium carbonate; many fine and medium soft masses of soluble salts; moderately alkaline; clear smooth boundary.

Ckz—14 to 36 inches; brown (10YR 5/3) sandy loam stratified with thin lenses of sandy clay loam; dark brown (10YR 4/3) moist; massive; soft, friable, slightly sticky and slightly plastic; few coarse roots; violently effervescent; many medium and coarse soft masses of calcium carbonate; many medium and coarse soft masses of soluble salts; strongly alkaline; clear smooth boundary.

Cgkz—36 to 60 inches; light gray (2.5Y 7/2) sandy loam, light brownish gray (10YR 6/2) moist; many prominent reddish yellow (5YR 6/6) and greenish gray (5YR 6/1) mottles; massive; soft, very friable, slightly sticky and slightly plastic; violently effervescent; many medium and coarse soft masses of calcium carbonate; many medium and coarse soft masses of soluble salts; strongly alkaline.

The physical and chemical properties of these soils are highly variable within a short distance. The depth to the seasonal high water table is 12 to 24 inches from April through June. The water table is above a depth of 40 inches during most of the year. The particle-size control section is stratified with layers that vary in thickness and range in texture from clay to loamy sand. The hue is 7.5YR to 5Y throughout the profile. The C horizon commonly has an electrical conductivity of more than 16 millimhos per centimeter. Exchangeable sodium is commonly more than 20 percent throughout the profile.

Arvada Series

The Arvada series consists of very deep, well drained soils on alluvial fans and low terraces. These soils formed in alluvium derived dominantly from sodic shale. Slope ranges from 0 to 6 percent. Elevation is 5,000 to 6,400 feet. The annual precipitation is 7 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Arvada clay loam in an area of Arvada-Absted-Slickspots complex, 0 to 6 percent slopes, near the center NW¼ sec. 1, T. 38 N., R. 83 W.

E—0 to 1 inch; light brownish gray (2.5Y 6/2) clay loam, dark grayish brown (2.5Y 4/2) moist; weak medium platy structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; common fine roots; moderately alkaline; abrupt smooth boundary.

A—1 to 3 inches; light olive brown (2.5Y 5/4) clay loam, olive brown (2.5Y 4/4) moist; strong medium granular structure; soft, friable, sticky and plastic; common fine roots; strongly alkaline; abrupt smooth boundary.

Btn—3 to 13 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; weak coarse prismatic structure parting to strong coarse angular blocky; extremely hard, very firm, very sticky and very plastic; few fine roots; many prominent clay films on faces of peds; slightly effervescent; disseminated calcium carbonate; very strongly alkaline; clear wavy boundary.

Btkn—13 to 25 inches; light brownish gray (2.5Y 6/2) clay, dark grayish brown (2.5Y 4/2) moist; weak coarse prismatic structure; extremely hard, very firm, very sticky and very plastic; common distinct clay films on faces of peds; violently effervescent; calcium carbonate is disseminated and also occurs as common coatings on faces of peds; very strongly alkaline; gradual wavy boundary.

Bny—25 to 42 inches; olive gray (5Y 4/2) clay, olive gray (5Y 4/2) moist; massive; extremely hard, firm, very sticky and very plastic; strongly effervescent; disseminated calcium carbonate; many fine seams and threads of gypsum; moderately alkaline; clear wavy boundary.

C—42 to 60 inches; olive gray (5Y 4/2) clay, olive gray (5Y 4/2) moist; massive; hard, friable, very sticky and very plastic; strongly effervescent; disseminated calcium carbonate; strongly alkaline.

The A and E horizons have hue of 10YR or 2.5Y. The B and C horizons have hue of 5Y to 10YR. The A and E horizons have a texture of clay loam, loam, or fine sandy loam. They have a slightly alkaline to strongly alkaline reaction. Some pedons do not have an E horizon.

The Btn horizon has a texture of clay, clay loam, or silty clay and is 35 to 50 percent clay. The By and C horizons have a texture of clay loam, silty clay loam, silty clay, or clay.

Reaction in the Bny and C horizons is moderately alkaline to very strongly alkaline. When reaction is moderately alkaline, it is buffered by gypsum or other soluble salts in the horizon. In some pedons the Bny horizon extends to a depth of 60 inches or more. A Bkny horizon which has an accumulation of sodium, gypsum, and calcium carbonate occurs below the Bny horizon in some pedons.

Asholler Series

The Asholler series consists of very shallow or shallow, somewhat excessively drained soils on knolls and low mountain foothills. These soils formed in residuum and slopewash alluvium derived from granite. Slopes range from 15 to 55 percent. Elevation is 6,200 to 7,600 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 37 to 42 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Asholler gravelly loam in an area of Pesmore-Asholler-Rock outcrop complex, 15 to 55 percent slopes, 990 feet north and 1,890 feet west of the southeast corner of sec. 21, T. 32 N., R. 88 W.

A—0 to 3 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 4/3) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; 25 percent gravel and 5 percent cobbles; slightly alkaline; abrupt wavy boundary.

AC—3 to 7 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; weak medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; 40 percent gravel and 10 percent cobbles; neutral; clear wavy boundary.

C—7 to 17 inches; pale brown (10YR 6/3) very gravelly loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots; 40 percent gravel and 10 percent cobbles; slightly alkaline; abrupt wavy boundary.

R—17 inches; hard, fractured granite.

The depth to hard bedrock ranges from 6 to 20 inches. The particle-size control section averages 40 to 70 percent rock fragments. The rock fragments consist of 20 to 50 percent gravel, 5 to 20 percent cobbles, and 0 to 10 percent stones. The fine-earth texture of the particle-size control section is loam, sandy clay loam, or clay loam. The A and C horizons have a neutral or slightly alkaline reaction.

Bachus Series

The Bachus series consists of moderately deep, well drained soils in mountain valleys and on mountain dip slopes. These soils formed in slopewash alluvium and residuum derived from quartzitic sandstone. Slope ranges from 4 to 20 percent. Elevation is 7,000 to 9,000 feet. The annual precipitation is 15 to 25 inches, the annual temperature is 32 to 37 degrees F, and the frost-free period is less than 80 days. Frost is common in the summer months.

Typical pedon of Bachus loam in an area of Bachus-Clayburn association, undulating, 2,250 feet north and 300 feet east of the southwest corner of sec. 6, T. 40 N., R. 88 W.

A—0 to 4 inches; very dark gray (10YR 3/1) loam, black (10YR 2/1) moist; moderate medium and fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; neutral; clear smooth boundary.

Bt1—4 to 8 inches; dark gray (10YR 4/1) clay loam, very dark gray (10YR 3/1) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; few faint clay films on faces of peds; neutral; clear wavy boundary.

Bt2—8 to 16 inches; dark grayish brown (10YR 4/2) clay loam, very dark grayish brown (10YR 3/2) moist; strong medium angular blocky structure; hard, friable, slightly sticky and plastic; many fine and medium roots; many distinct clay films on faces of peds; slightly acid; clear wavy boundary.

C—16 to 22 inches; brown (10YR 5/3) cobbly clay loam, dark brown (10YR 4/3) moist; massive; hard, friable, slightly sticky and plastic; common fine and medium roots; 20 percent angular sandstone cobbles; neutral; abrupt wavy boundary.

R—22 inches; hard fractured quartzitic sandstone.

The depth to hard bedrock ranges from 20 to 40 inches. The rock fragments throughout the profile are mainly angular cobbles and stones. The A and B horizons have a slightly acid or neutral reaction. The A horizon is 0 to 15 percent rock fragments.

The Bt horizon has a fine-earth texture of loam or clay loam. It averages 0 to 15 percent rock fragments. In some pedons the thin Bt horizon immediately above the bedrock is 15 to 25 percent rock fragments. The C horizon has a fine-earth texture of loam or clay loam. It is 5 to 25 percent rock fragments. Some pedons do not have a C horizon.

Badwater Series

The Badwater series consists of very deep, well drained soils on valley sides below quartzitic sandstone escarpments. These soils formed in colluvium derived from quartzitic sandstone. Slope ranges from 8 to 30 percent. Elevation is 7,000 to 8,800 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 32 to 35 degrees F, and the frost-free period is less than 80 days. Frost is common in the summer months.

Typical pedon of Badwater bouldery loam in a area of Badwater-Rubble land association, moderately steep, 300 feet east and 1,020 feet south of the northwest corner of sec. 14, T. 40 N., R. 88 W.

A—0 to 2 inches; dark brown (10YR 3/3) bouldery loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; 25 percent boulders; neutral; clear wavy boundary.

AB—2 to 6 inches; dark brown (10YR 3/3) bouldery loam, very dark brown (10YR 2/2) moist; moderate medium subangular blocky structure; soft, very friable, nonsticky and nonplastic; many fine roots; 25 percent boulders; neutral; clear wavy boundary.

Bt1—6 to 24 inches; dark brown (10YR 4/3) very bouldery clay loam, very dark grayish brown (10YR 3/2) moist; moderate coarse subangular blocky structure; hard, friable, slightly sticky and plastic; common medium roots; few faint clay films on faces of peds; 45 percent boulders; neutral; clear irregular boundary.

Bt2—24 to 35 inches; yellowish brown (10YR 5/4) extremely bouldery clay loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and plastic; common medium roots in fine earth; few faint clay films on faces of peds and many distinct clay films on faces of boulders; 65 percent boulders; neutral; gradual irregular boundary.

C—35 to 60 inches; yellowish brown (10YR 5/4) extremely bouldery loam, dark yellowish brown (10YR 4/4) moist; massive; hard, friable, slightly sticky and plastic; 85 percent boulders; neutral.

Reaction is slightly acid or neutral throughout the profile. The Bt and C horizons have a fine-earth texture of clay loam or loam. The Bt1 horizon is 35 to 60 percent boulders. The Bt2 horizon is 25 to 35 percent clay and is 60 to 90 percent boulders. The C horizon is 80 to 90 percent boulders.

Barnum Series

The Barnum series consists of very deep, well drained soils on flood plains. These soils formed in alluvium derived dominantly from sandstone, siltstone, and shale. Slope ranges from 0 to 3 percent. Elevation is 5,600 to 6,100 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Barnum fine sandy loam in an area of

Barnum-Redbank fine sandy loams, 0 to 3 percent slopes, 120 feet north and 1,100 feet east of the southwest corner of sec. 17, T. 40 N., R. 84 W.

A—0 to 7 inches; reddish brown (5YR 5/4) fine sandy loam, reddish brown (5YR 4/4) moist; weak medium and coarse granular structure; soft, friable, nonsticky and nonplastic; many medium, fine, and very fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

C—7 to 60 inches; light reddish brown (5YR 6/4) loam stratified with thin layers of loamy fine sand and silty clay loam, reddish brown (5YR 4/4) moist; massive with many bedding planes; hard, friable, slightly sticky and nonplastic; common fine and very fine, and few medium roots; strongly effervescent; disseminated calcium carbonate; few seams, filaments and soft masses of gypsum; strongly alkaline.

The particle-size control section averages 18 to 26 percent clay. The content of rock fragments throughout the profile ranges from 0 to 10 percent. The rock fragments are mainly fine gravel. The A horizon has hue of 5YR or 7.5YR. It has a slightly alkaline or moderately alkaline reaction. The C horizon is dominantly loam, clay loam, or silty clay loam, but it is stratified with thin layers of loamy sand, loamy fine sand, or fine sandy loam. It has a moderately alkaline or strongly alkaline reaction.

Bateson Series

The Bateson series consists of very deep, well drained soils on plateaus. These soils formed in alluvium or eolian deposits overlying material derived from tuffaceous conglomerate. Slope ranges from 0 to 6 percent. Elevation is 6,700 to 7,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 37 to 42 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Bateson loam, 0 to 6 percent slopes, 2,600 feet north and 2,000 feet east of the southwest corner of sec. 30, T. 32 N., R. 84 W.

A—0 to 3 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate fine granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots; neutral; clear smooth boundary.

BA—3 to 6 inches; dark yellowish brown (10YR 4/4) loam, dark yellowish brown (10YR 3/4) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common fine roots; few faint clay films on faces of peds; neutral; clear wavy boundary.

Bt1—6 to 12 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to strong medium angular blocky; very hard, firm, sticky and plastic; common fine roots; many prominent clay films on faces of peds; neutral; clear wavy boundary.

Bt2—12 to 18 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; common fine roots; many distinct clay bridges and common distinct clay films on faces of peds; slightly alkaline; gradual wavy boundary.

2Bk—18 to 60 inches; light yellowish brown (10YR 6/4) very gravelly coarse sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and nonplastic; slightly effervescent matrix, common extremely coarse rounded soft masses of calcium carbonate and thin coatings on undersides of rock fragments; common silt and sand sized glass shards; 45 percent gravel, 5 percent cobbles; moderately alkaline.

The A and Bt horizons are 0 to 15 percent rock fragments; they are mainly gravel. These horizons have a neutral or slightly alkaline reaction. The Bt horizon has a texture of clay loam or sandy clay loam and averages 25 to 35 percent clay. Commonly, the upper part of this horizon has 35 to 40 percent clay.

The 2Bk horizon has a fine earth that is tuffaceous material. It commonly has a fine-earth texture of coarse sandy loam or sandy loam, but in the lower part of some pedons the fine-earth texture is loamy coarse sand or loamy sand. The 2Bk horizon is 35 to 60 percent rock fragments. These are mainly gravel and 0 to 10 percent cobbles. Reaction in this horizon is slightly alkaline or moderately alkaline. In some pedons the calcium carbonate in this horizon occurs as irregular isolated pockets. The depth to the 2Bk horizon ranges from 14 to 28 inches.

Bessemer Series

The Bessemer series consists of very deep, well drained soils on pediments. These soils formed in alluvium derived from various sources. Slope ranges from 1 to 10 percent. Elevation ranges from 5,000 to 6,500. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Bessemer gravelly clay loam, 1 to 8 percent slopes, 1,750 feet east and 900 feet south of the northwest corner of sec. 35, T. 33 N., R. 79 W.

A—0 to 2 inches; dark yellowish brown (10YR 4/4) gravelly clay loam, dark brown (10YR 3/3) moist; weak very fine granular structure; soft, very friable, sticky and plastic; many fine roots; 15 percent gravel, 5 percent cobbles; moderately alkaline; clear smooth boundary.

Bt—2 to 9 inches; yellowish brown (10YR 5/4) gravelly clay, dark brown (10YR 4/3) moist; strong medium prismatic structure parting to strong coarse angular blocky; hard, firm, sticky and plastic; common fine roots; many distinct clay films on faces of peds; 15 percent gravel, 5 percent cobbles; moderately alkaline; gradual wavy boundary.

Btk—9 to 14 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, firm, sticky and plastic; common fine roots; common distinct clay films on faces of peds; violently effervescent; disseminated calcium carbonate; 20 percent gravel, 10 percent cobbles; moderately alkaline; gradual wavy boundary.

Bk—14 to 60 inches; pale brown (10YR 6/3) very cobbly loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; violently effervescent; calcium carbonate is disseminated and also occurs as irregular coarse soft masses and coatings on undersides of rock fragments; 25 percent cobbles, 25 percent gravel; moderately alkaline.

The A and Bt horizons have a slightly alkaline or moderately alkaline reaction. The Bt horizon has a fine-earth texture of clay or clay loam. It is 35 to 45 percent clay and is 0 to 25 percent rock fragments, mainly gravel.

The Bk horizon has a fine-earth texture of loam, clay loam, or sandy clay loam. It is 20 to 35 percent clay and is 35 to 55 percent rock fragments, mainly gravel and cobbles. Calcium carbonate equivalent in this horizon ranges from 6 to 14 percent. In some pedons, however, occasional pockets with a calcium carbonate equivalent of more than 14 percent are present. Reaction in the Bk horizon is moderately alkaline or strongly alkaline.

Birdsley Series

The Birdsley series consists of shallow, well drained soils on hills, escarpments, and ridges. These soils formed in residuum derived from sodic shale. Slopes range from 10 to 60 percent. Elevation is 5,500 to 6,500 feet. The annual precipitation is 7 to 9 inches, the annual temperature is 44 to 48 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Birdsley loam in an area of Mudray-Bributte-Birdsley complex, 6 to 30 percent slopes, 2,650 feet east and 1,400 feet south of the northwest corner of sec. 18, T. 37 N., R. 87 W.

A—0 to 1 inch; light gray (2.5Y 7/2) loam, dark grayish brown (2.5Y 4/2) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; slightly effervescent; disseminated calcium carbonate; very strongly alkaline; abrupt smooth boundary.

C1—1 to 3 inches; light brownish gray (2.5Y 6/2) clay loam, olive brown (2.5Y 4/4) moist; massive; hard, firm, sticky and plastic; few fine roots; violently effervescent; disseminated calcium carbonate; very strongly alkaline; clear smooth boundary.

C2—3 to 18 inches; light brownish gray (2.5Y 6/2) loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, firm, sticky and plastic; few fine threads of calcium carbonate; violently effervescent; disseminated calcium carbonate; very strongly alkaline; clear smooth boundary.

Cr—18 inches; soft sodic shale.

The depth to soft bedrock ranges from 10 to 20 inches. The hue is 2.5Y or 5Y throughout the profile. The A horizon has a strongly alkaline or very strongly alkaline reaction. The C horizon has a texture of loam or clay loam and is 18 to 30 percent clay.

Blackdraw Series

The Blackdraw series consists of very deep, well drained soils on hillsides. These soils formed in slopewash alluvium and residuum derived from sodic shale. Slope ranges from 3 to 15 percent. Elevation is 5,000 to 5,800 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Blackdraw clay loam in an area of Blackdraw-Lolite-Gullied land complex, 3 to 20 percent slopes, 900 feet west and 1,500 feet north of the southeast corner of sec. 25, T. 38 N., R. 81 W.

A—0 to 1 inch; dark grayish brown (2.5Y 4/2) clay loam, very dark grayish brown (2.5Y 3/2) moist; moderate very fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and few coarse roots; slightly effervescent; disseminated calcium carbonate; slightly alkaline; clear smooth boundary.

By—1 to 12 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; massive; hard, firm, sticky and plastic; common fine roots; slightly effervescent; disseminated calcium carbonate; common fine threads and seams of gypsum; slightly alkaline; gradual wavy boundary.

C—12 to 60 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; massive; very hard, very firm, very sticky and very plastic; few fine clusters of sodium sulfate crystals inherent in the parent material; slightly alkaline.

The horizons above a depth of 19 inches are effervescent and below this depth they are noneffervescent. The calcium carbonate in the upper horizons of these soils has been added by surface water overflow and dust. The hue is 2.5Y to 10YR throughout the profile. Reaction throughout the profile is slightly alkaline or moderately alkaline.

The By and C horizons have a texture of clay loam, silty clay loam, silty clay, or clay. They are 35 to 55 percent clay. The A horizon has an electrical conductivity of less than 4 millimhos per centimeter. The By horizon has an electrical conductivity of less than 8 millimhos per centimeter and is 2 to 9 percent gypsum. The C horizon has an exchangeable sodium percentage of 15 to 35 and an electrical conductivity of 8 to 16 millimhos per centimeter. The clusters and masses of salt crystals in the C horizon are dominantly sodium sulfate and were inherited from the parent material.

Blackhall Series

The Blackhall series consists of shallow, somewhat excessively drained soils on terrace breaks, pediment breaks, and hills. These soils formed in residuum derived from sandstone. Slope ranges from 5 to 40 percent. Elevation is 5,800 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Blackhall sandy loam in an area of McFadden-Edlin-Blackhall complex, 5 to 40 percent slopes, NW¼SW¼ sec. 2, T. 30 N., R. 89 W.

A—0 to 2 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; moderate medium granular structure; slightly hard, friable, nonsticky and nonplastic; many fine roots; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C—2 to 14 inches; very pale brown (10YR 7/3) sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; common fine roots; 15 percent soft sandstone fragments; violently effervescent; disseminated calcium carbonate; strongly alkaline; clear wavy boundary.

Cr—14 inches; very pale brown soft sandstone.

The depth to soft bedrock ranges from 10 to 20 inches. The A horizon has a slightly alkaline or moderately alkaline reaction. The C horizon has a texture of sandy loam or fine sandy loam. The C horizon is 8 to 18 percent clay and is 0 to 35 percent soft sandstone fragments. This horizon has a moderately alkaline or strongly alkaline reaction.

Blazon Series

The Blazon series consists of shallow, well drained soils on hills, escarpments, and dip slopes. These soils formed in residuum and slopewash alluvium derived from sandstone, siltstone, and shale. Slope ranges from 5 to 60 percent. Elevation is 6,000 to 7,400 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 39 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Blazon gravelly loam in an area of Rencot-Blazon complex, 15 to 40 percent slopes, 1,250 feet east and 880 feet north of the southwest corner of sec. 9, T. 38 N., R. 87 W.

A—0 to 3 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 4/3) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; slightly effervescent; disseminated calcium carbonate; 20 percent gravel; moderately alkaline; clear smooth boundary.

C1—3 to 6 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; violently effervescent; disseminated calcium carbonate; 20 percent gravel; strongly alkaline; clear smooth boundary.

C2—6 to 16 inches; pale brown (10YR 6/3) gravelly loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few medium roots; violently effervescent; disseminated calcium carbonate; 15 percent gravel; strongly alkaline; clear smooth boundary.

Cr—16 inches; soft siltstone.

The depth to soft bedrock ranges from 10 to 20 inches. The hue is 10YR or 2.5Y throughout the profile. The A horizon has a slightly alkaline to strongly alkaline reaction. The C horizon has a fine-earth texture of loam, clay loam, or sandy clay loam. The C horizon is 18 to 32 percent clay and is 0 to 20 percent rock fragments. The rock fragments are mainly gravel. The C horizon has a moderately alkaline or strongly alkaline reaction. Some pedons have a Bk horizon with a visible accumulation of calcium carbonate.

Boettcher Series

The Boettcher series consists of moderately deep, well drained soils on hills. These soils formed in slopewash alluvium and residuum derived from sandstone and shale. Slope ranges from 3 to 30 percent. Elevation is 6,400 to 7,800 feet. The annual precipitation is 10 to 14 inches, the

annual air temperature is 40 to 43 degrees F, and the frost-free period is 80 to 110 days.

Typical pedon of Boettcher loam in an area of Boettcher-Pinelli-Worfman loams, 3 to 15 percent slopes, 2,100 feet east and 930 feet south of the northwest corner of sec. 35, T. 35 N., R. 84 W.

A—0 to 2 inches; grayish brown (10YR 5/2) loam, dark brown (10YR 3/3) moist; weak medium platy structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; neutral; clear smooth boundary.

Bt1—2 to 6 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; many fine roots; common distinct clay films on faces of peds; slightly alkaline; clear smooth boundary.

Bt2—6 to 16 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; moderate coarse prismatic structure parting to moderate medium angular blocky; hard, firm, very sticky and very plastic; common fine and medium roots; many prominent clay films on faces of peds; slightly alkaline; clear smooth boundary.

Bk—16 to 35 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; massive; slightly hard, friable, sticky and plastic; few fine roots; strongly effervescent; calcium carbonate is disseminated and also occurs as common fine seams and soft masses; moderately alkaline; clear wavy boundary.

Cr—35 inches; soft sandstone interbedded with shale.

The depth to soft bedrock ranges from 20 to 40 inches. The content of rock fragments throughout the profile ranges from 0 to 35 percent. The rock fragments are mainly less than 10 inches in diameter. The A horizon has a neutral or slightly alkaline reaction. The Bt and Bk horizons have a fine-earth texture of clay loam or clay. The Bt horizon is 35 to 50 percent clay. It has slightly alkaline or moderately alkaline reaction. The Bk horizon has hue of 10YR or 2.5Y. It has a moderately alkaline or strongly alkaline reaction.

Bosler Series

The Bosler series consists of very deep, well drained soils on plateaus, terraces, and foot slopes. These soils formed in alluvium derived from various sources. Slope ranges from 1 to 15 percent. Elevation is 6,000 to 7,400 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 38 to 44 degrees F, and the frost-free period is 90 to 120 days.

Typical pedon of Bosler sandy loam in an area of Bosler-Alcova complex, 2 to 10 percent slopes, 680 feet east and 900 feet south of the northwest corner of sec. 35, T. 35 N., R. 84 W.

A—0 to 2 inches; grayish brown (10YR 5/2) sandy loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; neutral.

Bt1—2 to 8 inches; brown (7.5YR 5/2) sandy clay loam, dark brown (7.5YR 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; common distinct clay bridges on faces of peds; neutral; clear wavy boundary.

Bt2—8 to 14 inches; brown (7.5YR 5/2) sandy clay loam, dark brown (7.5YR 4/2) moist; weak coarse prismatic structure parting to moderate medium subangular blocky; hard, friable, slightly sticky and slightly plastic; common fine roots; many distinct clay bridges and a few distinct clay films on faces of peds; slightly alkaline; clear wavy boundary.

Btk—14 to 18 inches; brown (7.5YR 5/2) sandy clay loam, dark brown (7.5YR 4/2) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few fine roots; common distinct clay bridges and few faint clay films on faces of peds; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk—18 to 24 inches; pinkish gray (7.5YR 6/2) sandy clay loam, brown (7.5YR 5/2) moist; massive; hard, friable, slightly sticky and slightly plastic; violently effervescent; calcium carbonate is disseminated and also occurs as many fine seams and few medium soft masses; strongly alkaline; clear wavy boundary.

2Bk—24 to 60 inches; pinkish gray (7.5YR 6/2) very gravelly sand, brown (7.5YR 5/2) moist; massive; slightly hard, loose, nonsticky and nonplastic; violently effervescent; calcium carbonate is disseminated and also occurs as coatings on rock fragments and as common medium soft masses; 50 percent gravel; strongly alkaline.

The A horizon has neutral or slightly alkaline reaction. Reaction of the Bk and 2Bk horizons is moderately alkaline or strongly alkaline. The Bt, Bk, and 2Bk horizons have hue of 7.5YR or 10YR.

The Bt horizon is 20 to 30 percent clay. The Bk horizon commonly has a texture of sandy clay loam, but in some pedons it is sandy loam. The Bk horizon is 18 to 27 percent clay. Calcium carbonate equivalent in this horizon ranges from 15 to 25 percent. The 2Bk horizon has a fine-earth texture of sand, coarse sand, or loamy sand. It is 35 to 60 percent rock fragments, mainly gravel. The depth to the 2Bk horizon ranges from 20 to 35 inches.

The Bosler soils in map unit 131 are a taxadjunct to the Bosler series because the depth to the 2Bk horizon is 15 to 20 inches. This difference, however, does not significantly affect the use or behavior of the soils.

Bowbac Series

The Bowbac series consists of moderately deep, well drained soils on hills and dip slopes. These soils formed in slopewash alluvium and residuum derived dominantly from sandstone. Slope ranges from 3 to 15 percent. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Bowbac loamy fine sand in an area of Bowbac-Hiland-Worf complex, 3 to 15 percent slopes, 1,450 feet west and 450 feet south of the northeast corner of sec. 33, T. 35 N., R. 79 W.

A1—0 to 2 inches; brown (10YR 5/3) loamy fine sand, dark grayish brown (10YR 4/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many fine and common medium and coarse roots; moderately alkaline; clear smooth boundary.

A2—2 to 5 inches; yellowish brown (10YR 5/4) loamy fine sand, dark brown (10YR 4/3) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; many fine and common medium and coarse roots; moderately alkaline; clear smooth boundary.

Bt1—5 to 9 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure parting to moderate medium and coarse subangular blocky; slightly hard, very friable, slightly sticky and slightly plastic; common fine and few medium roots; common distinct clay bridges and few faint clay films on faces of peds; moderately alkaline; gradual wavy boundary.

Bt2—9 to 13 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate coarse subangular blocky; hard, friable, slightly sticky and slightly plastic; common fine and few medium roots; many distinct clay bridges and few distinct clay films on faces of peds; moderately alkaline; clear wavy boundary.

Btk—13 to 16 inches; brown (10YR 5/3) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate medium and coarse subangular blocky; hard, friable, sticky and plastic; common fine and few medium roots; many distinct clay bridges and common faint and few distinct clay films on faces of peds; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk—16 to 23 inches; light yellowish brown (2.5Y 6/4) sandy clay loam, olive brown (2.5Y 4/4) moist; thick platy rock structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; violently effervescent; common thin seams of calcium carbonate between plates; strongly alkaline; clear wavy boundary.

Cr—23 inches; soft platy sandstone.

The depth to soft bedrock ranges from 20 to 40 inches. The A horizon has a neutral to moderately alkaline reaction. The Bt horizon has a texture of sandy loam or sandy clay loam and averages 20 to 30 percent clay. It has a slightly alkaline or moderately alkaline reaction. The Bk horizon has hue of 2.5Y or 10YR. It has a texture of sandy clay loam, fine sandy loam, or sandy loam. Reaction of this horizon is moderately alkaline or strongly alkaline.

Bributte Series

The Bributte series consists of shallow, well drained soils on hills and ridges. These soils formed in residuum and slopewash alluvium derived from sodic shale. Slope ranges from 10 to 30 percent. Elevation is 5,600 to 6,100 feet. The annual precipitation is 7 to 9 inches, the annual temperature is 44 to 47 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Bributte silty clay loam in an area of Mudray-Bributte-Birdsley complex, 6 to 30 percent slopes, SE1/4NE1/4 sec. 18, T. 37 N., R. 87 W.

A—0 to 1 inch; light brownish gray (10YR 6/2) silty clay loam, grayish brown (10YR 5/2) moist; weak fine and very fine granular structure; hard, firm, sticky and plastic; few fine roots; slightly effervescent; disseminated calcium carbonate; very strongly alkaline; clear smooth boundary.

C1—1 to 8 inches; light yellowish brown (10YR 6/4) silty clay, brown (10YR 5/3) moist; massive; extremely hard, very firm, very sticky and very plastic; few fine roots; violently effervescent; disseminated calcium carbonate; very strongly alkaline; gradual wavy boundary.

C2—8 to 17 inches; brownish gray (10YR 6/2) silty clay, dark grayish brown (10YR 4/2) moist; massive; extremely hard, very firm, very sticky and very plastic; slightly effervescent; calcium carbonate is disseminated and also occurs as common medium soft masses; few medium soft masses of soluble salts; very strongly alkaline; clear wavy boundary.

Cr—17 inches; olive sodic shale.

The depth to soft bedrock ranges from 10 to 20 inches. Exchangeable sodium ranges from 15 to 35 percent throughout the profile. Reaction throughout the profile is strongly alkaline or very strongly alkaline. The C horizon has a texture of silty clay or clay. The masses of calcium carbonate and other soluble salts in the C horizon are inherited from the parent material.

Bridger Series

The Bridger series consists of very deep, well drained soils on hills within broad mountain valleys. These soils formed in slopewash alluvium derived from various sources. Slope ranges from 2 to 15 percent. Elevation is 7,000 to 7,800 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 34 to 37 degrees F, and the frost-free period is less than 90 days. Frost is common in the summer months.

Typical pedon of Bridger loam, 2 to 15 percent slopes, 2,320 feet east and 1,500 feet south of the northwest corner of sec. 22, T. 31 N., R. 79 W.

A—0 to 4 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, friable, slightly sticky and slightly plastic; many fine roots; slightly acid; clear smooth boundary.

AB—4 to 10 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; slightly acid; clear smooth boundary.

Bt1—10 to 15 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; strong fine angular blocky structure; hard, friable, sticky and plastic; many fine roots; common distinct clay films on faces of peds; slightly acid; clear smooth boundary.

Bt2—15 to 26 inches; light yellowish brown (10YR 6/4) clay, yellowish brown (10YR 5/4) moist; strong medium prismatic structure parting to strong medium angular blocky; very hard, firm, very sticky and very plastic; common fine roots; many distinct clay films on faces of peds; slightly acid; clear wavy boundary.

Bk—26 to 60 inches; very pale brown (10YR 7/3) clay loam, brown (10YR 5/3) moist; massive; hard, firm, very sticky and very plastic; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

The A and Bt horizons have a slightly acid or neutral reaction. The Bt horizon is 35 to 50 percent clay. The Bk horizon has a calcium carbonate equivalent of 5 to 10 percent.

Briggsdale Series

The Briggsdale series consists of moderately deep, well drained soils on dip slopes. These soils formed in slopewash alluvium and residuum derived from sandstone. Slope ranges from 3 to 8 percent. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

Typical pedon of Briggsdale loam in an area of Worf-Briggsdale loams, 3 to 15 percent slopes, 1,180 feet west and 460 feet south of the northeast corner of sec. 32, T. 41 N., R. 80 W.

A1—0 to 2 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium roots; slightly alkaline; abrupt smooth boundary.

A2—2 to 4 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; moderate medium granular structure parting to weak fine granular; soft, very friable, slightly sticky and slightly plastic; many fine and medium roots; slightly alkaline; abrupt smooth boundary.

Bt—4 to 10 inches; yellowish brown (10YR 5/4) clay, dark brown (10YR 4/3) moist; moderate coarse prismatic structure parting to strong medium and coarse angular blocky; very hard, very firm, very sticky and very plastic; common fine roots; many prominent clay films on faces of peds; moderately alkaline; clear wavy boundary.

Btk1—10 to 13 inches; pale brown (10YR 6/3) clay, yellowish brown (10YR 5/4) moist; moderate coarse prismatic structure parting to strong medium and coarse angular blocky; very hard, very firm, very sticky and very plastic; common fine roots; many distinct clay films on faces of peds; strongly effervescent; calcium carbonate is disseminated and also occurs as many distinct coatings on faces of peds; moderately alkaline; gradual wavy boundary.

Btk2—13 to 19 inches; pale brown (10YR 6/3) clay, brown (10YR 5/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; few fine roots; common distinct clay films on faces of peds; violently effervescent; calcium carbonate is disseminated and also occurs as common fine threads and seams; moderately alkaline; gradual wavy boundary.

Bk—19 to 32 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; massive; hard, firm, sticky and plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as few fine threads and seams; strongly alkaline; abrupt wavy boundary.

Cr—32 inches; soft fine grained sandstone.

The depth to soft bedrock ranges from 20 to 40 inches. The Bt horizon has a texture of clay or clay loam and is 35 to 45 percent clay. It has a slightly alkaline or moderately alkaline reaction. The Bk horizon has a texture of loam or clay loam. It has a moderately alkaline or strongly alkaline reaction.

Brokenhorn Series

The Brokenhorn series consists of very deep, well drained soils on uplands. These soils formed in slopewash alluvium derived from gypsiferous shale. Slope ranges from 2 to 12 percent. Elevation is 5,000 to 5,800 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 46 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Brokenhorn clay loam in an area of Brokenhorn-Hyshot clay loams, 3 to 15 percent slopes, 400 feet west and 1,500 feet north of the southeast corner of sec. 15, T. 40 N., R. 82 W.

A—0 to 1 inch; light brownish gray (10YR 6/2) clay loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bw—1 to 4 inches; light brownish gray (10YR 6/2) clay loam, dark grayish brown (10YR 4/2) moist; moderate coarse prismatic structure parting to moderate medium subangular blocky; hard, firm, slightly sticky and slightly plastic; many fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bk1—4 to 10 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; weak medium prismatic structure parting to weak fine subangular blocky; hard, firm, slightly sticky and slightly plastic; common fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as common fine cylindrical soft masses in root channels, 18 percent calcium carbonate equivalent; moderately alkaline; diffuse wavy boundary.

Bk2—10 to 26 inches; light brownish gray (10YR 6/2) clay loam, dark grayish brown (10YR 4/2) moist; massive; hard, friable, sticky and plastic; common fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as common fine cylindrical soft masses in root channels, 27 percent calcium carbonate equivalent; moderately alkaline; diffuse wavy boundary.

Bk3—26 to 32 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; massive; very hard, very firm, sticky and plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as few fine cylindrical soft masses in root channels, 28 percent calcium carbonate equivalent; strongly alkaline; diffuse wavy boundary.

By—32 to 60 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; weak thin platy shale rock structure; hard, firm, sticky and plastic; violently effervescent; calcium carbonate is disseminated, 20 percent calcium carbonate equivalent; common fine seams and filaments of gypsum, 10 percent gypsum; moderately alkaline.

The Bw horizon is absent in some pedons. The Bk and By horizons have hue of 10YR or 2.5Y. The Bk and By horizons have a texture of clay loam or clay and are 35 to 50 percent clay. The calcium carbonate equivalent is 15 to 37 percent in the Bk horizon and 10 to 25 percent in the By horizon.

The electrical conductivity is 2 to 4 millimhos per centimeter in the Bk horizon and 4 to 8 millimhos per centimeter in the By horizon. The Bk and By horizons have a moderately alkaline or strongly alkaline reaction. The By horizon is 5 to 15 percent gypsum.

Brownsto Series

The Brownsto series consists of very deep, somewhat excessively drained soils on ridges and hills. These soils formed in alluvium and colluvium derived from various sources. Slope ranges from 3 to 40 percent. Elevation is 6,000 to 7,800 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 80 to 110 days.

Typical pedon of Brownsto cobbly loam in an area of Brownsto-Lupinto complex, 6 to 40 percent slopes, NW¹/₄SE¹/₄ sec. 24, T. 33 N., R. 89 W.

A--0 to 3 inches; grayish brown (10YR 5/2) cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate, medium and fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium roots; 20 percent cobbles and 10 percent gravel; slightly alkaline; clear smooth boundary.

BA—3 to 7 inches; grayish brown (10YR 5/2) gravelly loam, dark brown (10YR 4/3) moist; weak coarse subangular blocky structure; slightly hard, firm, sticky and plastic; few fine, common medium, and few coarse roots; violently effervescent; disseminated calcium carbonate; 25 percent gravel and 5 percent cobbles; moderately alkaline; clear smooth boundary.

Bk1—7 to 16 inches; light brownish gray (10YR 6/2) gravelly loam, grayish brown (10YR 5/2) moist; massive; hard, firm, sticky and plastic; few medium and coarse roots; violently effervescent; calcium carbonate is disseminated and also occurs as common medium and coarse soft masses; 20 percent gravel and 5 percent cobbles; moderately alkaline; clear smooth boundary.

Bk2—16 to 30 inches; light brownish gray (2.5Y 6/2) very gravelly loam, grayish brown (2.5Y 5/2) moist;

massive; slightly hard, firm, sticky and plastic; few coarse roots; violently effervescent; calcium carbonate is disseminated and also occurs as many medium and coarse soft masses and as moderately thick coatings on gravel; 35 percent gravel and 5 percent cobbles; moderately alkaline; gradual wavy boundary.

Bk3—30 to 60 inches; light olive brown (2.5Y 5/4) very gravelly loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, firm, sticky and plastic; violently effervescent; calcium carbonate is disseminated and also occurs as many medium and coarse soft masses and as moderately thick coatings on gravel; 40 percent gravel and 10 percent cobbles; moderately alkaline.

The A and Bk horizons have a fine-earth texture of loam or sandy loam. The A horizon is 15 to 35 percent rock fragments. The rock fragments are mainly gravel and cobbles. Reaction in the A horizon is slightly alkaline or moderately alkaline.

The Bk horizon is 15 to 25 percent clay and is 35 to 50 percent fine sand and coarser sand. The content of rock fragments in this horizon averages 35 to 60 percent. The rock fragments consist of 25 to 55 percent gravel, 5 to 20 percent cobbles, and 0 to 10 percent stones. In some pedons thin lenses of very gravelly sand are present in this horizon. Calcium carbonate equivalent in this horizon ranges from 15 to 40 percent. Reaction in this horizon is moderately alkaline or strongly alkaline.

Brownsto Variant

The Brownsto Variant consists of moderately deep, somewhat excessively drained soils on hills. These soils formed in slopewash alluvium and residuum derived from conglomerate. Slope ranges from 2 to 30 percent. Elevation is 6,700 to 7,000 feet. The average annual precipitation is 10 to 12 inches, the average annual temperature is 39 to 41 degrees F, and the frost-free period is 80 to 100 days.

Typical pedon of Brownsto Variant gravelly sandy loam in an area of Cragosen Variant-Brownsto Variant association, hilly, 2,200 feet south and 2,400 feet west of the northeast corner of sec. 1, T. 32 N., R. 88 W.

A—0 to 2 inches; pale brown (10YR 6/3) gravelly sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; 30 percent gravel; slightly alkaline; clear wavy boundary.

Bw—2 to 9 inches; yellowish brown (10YR 5/4) gravelly sandy loam, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; soft, very friable, nonsticky and nonplastic; common fine roots; slightly effervescent; disseminated calcium carbonate; 25 percent gravel; slightly alkaline; clear wavy boundary.

Bk1—9 to 23 inches; light yellowish brown (10YR 6/4) very gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; strongly effervescent; calcium carbonate is disseminated and also occurs as pendants on undersides of gravel; 50 percent gravel; strongly alkaline; clear wavy boundary.

2Bk2—23 to 30 inches; very pale brown (10YR 7/3) very gravelly sand, light yellowish brown (10YR 6/4) moist; massive; soft, very friable, nonsticky and nonplastic; violently effervescent; calcium carbonate is disseminated and also occurs as common medium soft masses and pendants on undersides of gravel; 50 percent gravel; very strongly alkaline; clear wavy boundary.

Cr—30 inches; soft conglomerate.

The depth to soft bedrock ranges from 20 to 40 inches. The particle-size control section averages 8 to 15 percent clay. Rock fragments are mainly gravel throughout the profile. The A and Bw horizons have a slightly alkaline or moderately alkaline reaction. The 2Bk horizon has a texture of very gravelly sand or very gravelly loamy sand. It has a strongly alkaline or very strongly alkaline reaction.

Buffcreek Series

The Buffcreek series consists of very deep, well drained soils on pediments, fan terraces, and alluvial fans. These soils formed in alluvium derived from various sources. Slope ranges from 0 to 12 percent. Elevation is 5,400 to 6,600 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Buffcreek gravelly loam in an area of Buffcreek-Redarrow association, 2 to 25 percent slopes, 1,500 feet south and 1,900 feet west of the northeast corner of sec. 18, T. 40 N., R. 84 W.

A—0 to 3 inches; brown (7.5YR 5/4) gravelly loam, dark brown (7.5YR 4/4) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; many fine and very fine roots; slightly effervescent; disseminated calcium carbonate; 20 percent gravel; slightly alkaline; clear smooth boundary.

Bk1—3 to 10 inches; light brown (7.5YR 6/4) very gravelly loam, brown (7.5YR 5/4) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as many prominent coatings on faces of peds, 37 percent calcium carbonate equivalent; 35

percent gravel and 5 percent cobbles; moderately alkaline; clear wavy boundary.

Bk2—10 to 22 inches; light reddish brown (5YR 6/4) very gravelly loam, yellowish red (5YR 5/6) moist; massive; hard, friable, slightly sticky and slightly plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as few prominent medium soft masses and as thick pendants on rock fragments, 26 percent calcium carbonate equivalent; 40 percent gravel and 10 percent cobbles; strongly alkaline; gradual wavy boundary.

Bk3—22 to 60 inches; yellowish red (5YR 5/6) very cobbly loam, yellowish red (5YR 4/6) moist; massive; hard, friable, slightly sticky and slightly plastic; violently effervescent; calcium carbonate is disseminated and also occurs as few distinct fine filaments and as distinct pendants on rock fragments, 20 percent calcium carbonate equivalent; 25 percent gravel, 30 percent cobbles, and 5 percent stones; strongly alkaline.

The particle-size control section is 35 to 60 percent rock fragments. The rock fragments are mainly gravel and cobbles and a few stones. The A and Bk horizons have hue of 7.5YR or 5YR. Reaction is neutral or slightly alkaline in the A horizon and moderately alkaline or strongly alkaline in the Bk horizon. Calcium carbonate equivalent in the Bk horizon ranges from 15 to 40 percent.

Cabin Series

The Cabin series consists of very deep, well drained soils on mountain side slopes. These soils formed in slopewash alluvium and residuum derived from crystalline rocks. Slope ranges from 6 to 30 percent. Elevation is 7,600 to 9,000 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 35 to 41 degrees F, and the frost-free period is less than 80 days. Frost is common in the summer months.

Typical pedon of Cabin loam in area of Cabin-Herbman complex, 6 to 40 percent slopes, 1,100 feet south and 100 feet east of the northwest corner of sec. 26, T. 40 N., R. 87 W.

A—0 to 6 inches; very dark grayish brown (10YR 3/2) loam, black (10YR 2/1) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; neutral; clear smooth boundary.

Bt1—6 to 15 inches; dark brown (10YR 3/3) sandy clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; few faint clay films and many distinct clay bridges on faces of peds; 10 percent gravel; neutral; clear smooth boundary.

Bt2—15 to 22 inches; yellowish brown (10YR 5/4) gravelly sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; common distinct clay bridges on faces of peds; 30 percent gravel; neutral; gradual wavy boundary.

C—22 to 60 inches; light olive brown (2.5Y 5/4) very gravelly loamy sand, olive brown (2.5Y 4/4) moist; single grain; loose, nonsticky and nonplastic; 45 percent gravel, 5 percent cobbles; neutral.

The A horizon is 0 to 15 percent rock fragments. The rock fragments in this horizon are mainly gravel. The A and Bt horizons have a slightly acid or neutral reaction. The Bt horizon is 20 to 27 percent clay, 35 to 50 percent fine sand and coarser sand, and 5 to 35 percent rock fragments. The rock fragments in this horizon are mainly gravel and a few cobbles.

The 2C horizon has hue of 2.5Y or 10YR. It has a neutral or slightly alkaline reaction. This horizon is 35 to 60 percent rock fragments. The rock fragments are mainly gravel and 0 to 15 percent cobbles. The depth to the 2C horizon ranges from 20 to 35 inches.

Cadoma Series

The Cadoma series consists of moderately deep, well drained soils on hills. These soils formed in slopewash alluvium and residuum derived from sodic shale. Slope ranges from 3 to 20 percent. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Cadoma clay loam in an area of Cadoma-Renohill-Samday clay loams, 3 to 12 percent slopes, 165 feet south and 1,155 feet east of the northwest corner of sec. 31, T. 39 N., R. 78 W.

A—0 to 5 inches; light brownish gray (2.5Y 6/2) clay loam, dark grayish brown (2.5Y 4/2) moist; weak fine granular structure; slightly hard, friable, sticky and plastic; many fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bn—5 to 15 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; moderate medium prismatic structure parting to moderate medium angular blocky; very hard, firm, sticky and plastic; few fine roots; strongly effervescent; disseminated calcium carbonate; very strongly alkaline; gradual wavy boundary.

Bkn—15 to 22 inches; light olive gray (5Y 6/2) clay, olive gray (5Y 5/2) moist; weak medium prismatic structure; very hard, firm, sticky and plastic; few fine roots; violently effervescent; disseminated calcium carbonate; very strongly alkaline; gradual wavy boundary.

Bkny—22 to 28 inches; light olive gray (5Y 6/2) clay, olive gray (5Y 5/2) moist; massive; hard, friable, sticky and plastic; few fine roots; violently effervescent; common fine irregular soft masses of calcium carbonate; common fine irregular soft masses of gypsum; moderately alkaline; gradual wavy boundary.

Bny—28 to 36 inches; light olive gray (5Y 6/2) clay, olive gray (5Y 5/2) moist; massive; hard, friable, sticky and plastic; few fine roots; strongly effervescent; disseminated calcium carbonate; few fine and medium irregular soft masses of gypsum; moderately alkaline; gradual wavy boundary.

Cr—36 inches; soft sodic platy shale.

The depth to soft bedrock ranges from 20 to 40 inches. The particle-size control section has a texture of clay loam, silty clay loam, silty clay, or clay and is 35 to 60 percent clay. Exchangeable sodium in the B horizons is 15 to 25 percent.

The A and Bn horizons have hue of 2.5Y or 10YR. The Bkn and Bkny horizons have hue of 5Y to 10YR. The Bny horizon has hue of 5Y or 2.5Y. The A, Bkny, and Bny horizons have a moderately alkaline or strongly alkaline reaction. The horizon immediately above the bedrock is 0 to 15 percent soft shale fragments. Some pedons do not have a Bkny or Bny horizon.

Cambria Series

The Cambria series consists of very deep, well drained soils on alluvial fan terraces and plateaus. These soils formed in alluvium derived from sandstone and shale. Slope ranges from 0 to 9 percent. Elevation is 5,000 to 6,500 feet. The annual precipitation is 9 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Cambria very fine sandy loam in an area of Cambria-Zigweid complex, 2 to 15 percent slopes, 2,640 feet south of the northeast corner of sec. 11, T. 36 N., R. 83 W.

A—0 to 1 inch; light brownish gray (2.5Y 6/2) very fine sandy loam, dark grayish brown (2.5Y 4/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; common fine roots; slightly alkaline; abrupt smooth boundary.

Bt—1 to 8 inches; light olive brown (2.5Y 5/4) loam, olive brown (2.5Y 4/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, friable, slightly sticky and slightly plastic; common fine roots; many distinct clay films on faces of peds; slightly alkaline; clear wavy boundary.

Bk—8 to 29 inches; light gray (2.5Y 7/2) loam, grayish brown (2.5Y 5/2) moist; weak medium prismatic structure; hard, friable, slightly sticky and slightly plastic; common fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as common fine soft masses; strongly alkaline; clear wavy boundary.

C—29 to 60 inches; light brownish gray (2.5Y 6/2) loam, grayish brown (2.5Y 5/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; strongly effervescent; disseminated calcium carbonate; strongly alkaline.

The A, Bk and C horizons have hue of 10YR or 2.5Y. The Bt horizon has hue of 7.5YR to 2.5Y. The A and Bt horizons have a slightly alkaline or moderately alkaline reaction. The Bk and C horizons have a moderately alkaline or strongly alkaline reaction. The Bt and Bk horizons have a texture of loam, sandy clay loam, or clay loam. The C horizon has a texture of loam or clay loam. Some pedons do not have a C horizon above a depth of 60 inches.

Castner Series

The Castner series consists of very shallow or shallow, well drained soils on mountain dip slopes. These soils formed in residuum derived from sandstone. Slope ranges from 5 to 40 percent. Elevation is 6,500 to 7,800 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 35 to 43 degrees F, and the frost-free period is 80 to 110 days.

Typical pedon of Castner channery loam in an area of Castner-Rock outcrop complex, 5 to 25 percent slopes, 3,700 feet north and 2,050 feet east of the southwest corner of sec. 9, T. 40 N., R. 85 W.

A1—0 to 2 inches; dark brown (10YR 4/3) channery loam, very dark grayish brown (10YR 3/2) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common fine, few medium and few coarse roots; 25 percent channery fragments; moderately alkaline; clear smooth boundary.

A2—2 to 8 inches; dark brown (10YR 4/3) very flaggy loam, dark brown (10YR 3/3) moist; weak medium fine and very fine granular structure; soft, very friable, slightly sticky and slightly plastic; common fine, few medium and few coarse roots; strongly effervescent; calcium carbonate is disseminated and also occurs as thick coatings on lower surfaces of rock fragments; 40 percent flagstones and channery fragments; moderately alkaline; clear wavy boundary.

Bk—8 to 14 inches; pale brown (10YR 6/3) very flaggy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as common medium soft masses and as thick coatings on lower surfaces of rock fragments; 60 percent flagstones and channery fragments; moderately alkaline; abrupt wavy boundary.

R—14 inches; hard fractured sandstone.

The depth to hard bedrock ranges from 8 to 20 inches. The particle-size control section averages 35 to 70 percent rock fragments. The rock fragments throughout the profile are mainly flagstones and channery fragments. The particle-size control section has a fine-earth texture of loam or fine sandy loam. It is 15 to 25 percent clay. The A horizon has a slightly alkaline or moderately alkaline reaction.

Cathedral Series

The Cathedral series consists of shallow, somewhat excessively drained soils on large knolls. These soils formed in residuum derived from granite. Slope ranges from 10 to 50 percent. Elevation is 6,100 to 6,600 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 42 to 44 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Cathedral gravelly sandy loam in an area of Rock outcrop-Cathedral complex, 10 to 50 percent slopes, NW¼NE¼ sec. 37, T. 29 N., R. 83 W.

A—0 to 3 inches; dark grayish brown (10YR 4/3) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak coarse granular structure; soft, friable, nonsticky and nonplastic; common fine and medium roots; neutral; clear smooth boundary.

AC—3 to 6 inches; dark brown (10YR 4/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; weak coarse granular structure; soft, friable, nonsticky and nonplastic; common fine and medium roots; 35 percent fine granitic gravel and 15 percent granitic cobbles; neutral; clear smooth boundary.

C—6 to 11 inches; brown (10YR 5/3) very gravelly sandy loam, dark brown (10YR 4/3) moist; massive; soft, friable, nonsticky and nonplastic; few medium roots; 35 percent fine granitic gravel and 15 percent granitic cobbles; neutral; abrupt smooth boundary.

R—11 inches; hard granite.

The depth to hard bedrock ranges from 10 to 20 inches. The particle-size control section is 12 to 18 percent clay and averages 35 to 60 percent rock fragments. The rock fragments are mainly granite gravel and a few cobbles and stones. Reaction is neutral or slightly acid throughout the profile.

Cavegulch Series

The Cavegulch series consists of very deep, well drained soils on alluvial fans and uplands. These soils formed in alluvium derived from gypsiferous shale. Slope ranges from 2 to 10 percent. Elevation is 5,000 to 5,800 feet. The annual precipitation is 10 to 12 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Cavegulch loam in an area of Cavegulch-Brokenhorn complex, 2 to 10 percent slopes, 2,000 feet north and 1,750 feet east of the southwest corner of sec. 16, T. 37 N., R. 83 W.

A—0 to 4 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; weak medium granular structure; soft, very friable, sticky and plastic; violently effervescent; disseminated calcium carbonate; moderately alkaline; gradual smooth boundary.

Bw—4 to 11 inches; pale brown (10YR 6/3) clay loam, dark grayish brown (10YR 4/2) moist; moderate medium angular blocky structure; slightly hard, friable, sticky and plastic; strongly effervescent; disseminated calcium carbonate; strongly alkaline; clear wavy boundary.

By1—11 to 22 inches; gray (10YR 6/1) clay loam, dark grayish brown (10YR 4/2) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and plastic; violently effervescent; disseminated calcium carbonate; common medium cylindrical masses of gypsum in root channels, 30 percent gypsum; strongly alkaline; gradual wavy boundary.

By2—22 to 36 inches; gray (10YR 5/1) clay loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, sticky and plastic; strongly effervescent; disseminated calcium carbonate; common medium seams and filaments of gypsum, 20 percent gypsum; moderately alkaline; gradual wavy boundary.

C—36 to 60 inches; gray (10YR 6/1) clay loam, grayish brown (10YR 5/2) moist; massive; soft, very friable, sticky and plastic; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

The particle-size control section is clay loam, silty clay loam, loam, or silt loam. It is 25 to 35 percent clay and is 5 to 15 percent fine sand and coarser sand. The hue is 10YR or 2.5Y throughout the profile. Reaction throughout the profile is moderately alkaline or strongly alkaline.

The electrical conductivity is 2 to 4 millimhos per centimeter in the Bw horizon, 4 to 12 millimhos per centimeter in the By horizon, and 8 to 16 millimhos per centimeter in the C horizon. The By horizon has a calcium carbonate equivalent of 15 to 25 percent and is 5 to 35 percent gypsum. The C horizon is commonly massive, but has weak platy rock structure in some pedons.

Chalkcreek Series

The Chalkcreek series consists of very deep, well drained soils on plateaus, foot slopes and alluvial fans. These soils formed in alluvium derived dominantly from tuffaceous siltstone. Slope ranges from 0 to 12 percent. Elevation is 6,000 to 7,100 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 39 to 42 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Chalkcreek loam, 0 to 8 percent slopes, 500 feet west and 2,000 feet south of the northeast corner of sec. 4, T. 29 N., R. 79 W.

A—0 to 4 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; moderate fine granular structure; soft, friable, sticky and plastic; many fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bw—4 to 11 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, firm, sticky and plastic; common fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

C—11 to 60 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; massive; very hard, firm, sticky and plastic; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

The particle-size control section is loam or clay loam. It is 20 to 30 percent clay and is 5 to 15 percent fine sand and coarser sand. Very fine sand-sized glass shards are common throughout the profile. The A and Bw horizons have a slightly alkaline or moderately alkaline reaction.

Chincap Series

The Chincap series consists of moderately deep, well drained soils on mountain dip slopes. These soils formed in slopewash alluvium and residuum derived from sandstone. Slope ranges from 10 to 20 percent. Elevation is 6,500 to 7,000 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 37 to 42 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Chincap fine sandy loam in an area of Castner-Chincap-Rock outcrop complex, 10 to 40 percent slopes, 1,950 feet south and 1,200 feet west of the northeast corner of sec. 17, T. 32 N., R. 80 W.

A1—0 to 1 inch; dark gray (10YR 4/1) fine sandy loam, very dark gray (10YR 3/1) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine and medium roots; neutral; clear smooth boundary.

A2—1 to 9 inches; dark grayish brown (10YR 4/2) sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium subangular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine and medium roots; slightly alkaline; clear smooth boundary.

C—9 to 23 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; weak coarse subangular blocky structure; soft, very friable, nonsticky and nonplastic; few medium and common coarse roots; 10 percent angular sandstone gravel; slightly alkaline.

R—23 inches; hard sandstone.

The depth to hard bedrock ranges from 20 to 40 inches. Reaction is neutral or slightly alkaline throughout the profile. The particle-size control section has a texture of fine sandy loam or sandy loam and is 8 to 18 percent clay. The content of rock fragments throughout the profile ranges from 0 to 15 percent. The rock fragments are mainly angular sandstone gravel. The C horizon in some pedons has a few small pockets which are effervescent.

Chipendale Series

The Chipendale series consists of very deep, well drained soils on hillsides and foot slopes. These soils formed in slopewash alluvium and residuum derived from gypsiferous shale. Slope ranges from 3 to 15 percent. Elevation is 5,100 to 6,000 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 45 to 51 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Chipendale clay loam in an area of Chipendale-Chipenhill clay loams, 5 to 15 percent slopes, 2,000 feet north and 2,200 feet west of the southeast corner of sec. 7, T. 37 N., R. 84 W.

A—0 to 2 inches; pale brown (10YR 6/3) clay loam, dark yellowish brown (10YR 4/4) moist; weak fine granular structure; soft, very friable, sticky and plastic; common fine roots; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

By1—2 to 4 inches; gray (10YR 5/1) clay loam, brown (10YR 4/3) moist; moderate medium granular structure; soft, friable, sticky and plastic; common fine roots; strongly effervescent; disseminated calcium carbonate; common fine rounded soft masses of gypsum; slightly alkaline; clear wavy boundary.

By2—4 to 11 inches; gray (10YR 6/1) clay, grayish brown (10YR 5/2) moist; moderate fine granular structure; hard, firm, very sticky and very plastic; few fine roots;

strongly effervescent; disseminated calcium carbonate; many fine and medium seams and filaments of gypsum; moderately alkaline; gradual wavy boundary.

By3—11 to 17 inches; light brownish gray (10YR 6/2) clay, grayish brown (10YR 5/2) moist; weak medium platy rock structure; hard, firm, very sticky and very plastic; strongly effervescent; disseminated calcium carbonate; common fine seams and filaments of gypsum; moderately alkaline; gradual wavy boundary.

C—17 to 60 inches; light brownish gray (10YR 6/2) clay, grayish brown (10YR 5/2) moist, 25 percent thin horizontal bands of yellowish brown (10YR 5/6) clay, dark yellowish brown (10YR 3/6) moist; weak medium platy rock structure; hard, friable, very sticky and very plastic; strongly effervescent; disseminated calcium carbonate; few thin horizontal seams of gypsum; moderately alkaline.

The particle-size control section has a texture of clay or clay loam and is 35 to 50 percent clay. The hue is 10YR to 5Y throughout the profile. A vesicular crust is on the surface of some pedons. Some pedons have a thin Bw horizon.

Reaction is slightly alkaline or moderately alkaline throughout the profile. The electrical conductivity is 2 to 4 millimhos per centimeter in the A horizon, 4 to 8 millimhos per centimeter in the By horizon, and 8 to 16 millimhos per centimeter in the C horizon. The By horizon is 8 to 20 percent gypsum. The C horizon is up to 60 percent soft plate-like shale fragments. In some pedons the lower part of the C horizon is noneffervescent.

Chipenhill Series

The Chipenhill series consists of very shallow or shallow, well drained soils on plateau and terrace breaks and hills. These soils formed in residuum and slopewash alluvium derived from gypsiferous shale. Slope ranges from 5 to 40 percent. Elevation is 5,000 to 6,000 feet. The annual precipitation is 8 to 12 inches, the annual temperature is 46 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Chipenhill clay loam in an area of Chipenhill-Rock outcrop complex, 15 to 30 percent slopes, 200 feet south and 2,520 feet east of the northwest corner of sec. 20, T. 37 N., R. 84 W.

A—0 to 1 inch; pale brown (10YR 6/3) clay loam, yellowish brown (10YR 5/4) moist; weak fine granular structure; soft, very friable, sticky and plastic; many fine and medium roots; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

AC—1 to 5 inches; pale brown (10YR 6/3) clay, yellowish brown (10YR 5/6) moist; massive; soft, very friable, sticky and plastic; many fine and medium roots; violently effervescent; disseminated calcium carbonate; many fine clusters of gypsum crystals formed by wetting and drying of parent material; 15 percent soft shale fragments that break down when moistened and rubbed; moderately alkaline; gradual wavy boundary.

C—5 to 11 inches; light yellowish brown (10YR 6/4) clay, yellowish brown (10YR 5/6) moist; medium platy rock structure; soft, very friable, sticky and plastic; common fine roots; strongly effervescent; disseminated calcium carbonate; many soft fine clusters of gypsum crystals formed by wetting and drying of parent material; 25 percent soft shale fragments that break down when moistened and rubbed; slightly alkaline; clear smooth boundary.

Cr—11 inches; soft platy gypsiferous shale.

The depth to soft bedrock ranges from 8 to 20 inches. The particle-size control section is clay loam, clay or silty clay and is 35 to 50 percent clay. Reaction throughout the profile is slightly alkaline to strongly alkaline. The hue is 10YR or 2.5Y throughout the profile. The A horizon is 0 to 35 percent rock fragments. The rock fragments are mainly rounded gravel and a few cobbles. The electrical conductivity is 2 to 4 millimhos per centimeter in the A horizon and 4 to 16 millimhos per centimeter in the C horizon. The C horizon is 5 to 35 percent soft shale fragments and 10 to 30 percent gypsum.

Chittum Series

The Chittum series consists of shallow, well drained soils on mountain slopes, ridges, and dip slopes. These soils formed in residuum and slopewash alluvium derived from sandstone. Slope ranges from 2 to 40 percent. Elevation is 7,000 to 9,000 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 33 to 36 degrees F, and the frost-free period is less than 90 days. Frost is common in the summer months.

Typical pedon of Chittum loam in an area of Chittum-Nielsen-Rock outcrop complex, 2 to 10 percent slopes, 2,300 feet east and 150 feet north of the southwest corner of sec. 30, T. 41 N., R. 86 W.

A—0 to 2 inches; dark brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; weak coarse granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; 5 percent angular gravel and cobbles; neutral; clear smooth boundary.

Bt1—2 to 12 inches; dark brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; moderate medium prismatic structure parting to weak medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; few distinct clay films on faces of peds; 5 percent angular gravel and cobbles; neutral; clear wavy boundary.

Bt2—12 to 18 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 3/4) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and plastic; few faint clay films on faces of peds; 15 percent angular gravel and cobbles; neutral; abrupt smooth boundary.

R—18 inches; quartzitic sandstone.

The depth to bedrock ranges from 10 to 20 inches. The hue is 7.5YR or 10YR throughout the profile. The Bt horizon has a fine-earth texture of clay loam, sandy clay loam, or loam and is 18 to 35 percent clay. Some pedons have a C horizon with a fine-earth texture of loam and a neutral reaction. The Bt and C horizons are 5 to 30 percent rock fragments. The rock fragments are mainly angular sandstone gravel and cobbles.

These Chittum soils have hue of 7.5YR or 10YR. This characteristic is outside those defined for the Chittum series. This difference, however, does not significantly affect the use or behavior of the soils.

Clarkelen Series

The Clarkelen series consists of very deep, somewhat excessively drained soils on flood plains. These soils formed in alluvium from various sources. Slope ranges from 0 to 4 percent. Elevation is 4,800 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Clarkelen sandy loam in an area of Haverdad-Clarkelen complex, saline, 0 to 3 percent slopes, 100 feet west and 1,350 feet south of the northeast corner of sec. 11, T. 34 N., R. 87 W.

A—0 to 2 inches; light brownish gray (10YR 6/2) sandy loam, brown (10YR 5/3) moist; weak medium granular structure; slightly hard, very friable, nonsticky and nonplastic; many fine and medium roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

C—2 to 60 inches; light yellowish brown (10YR 6/4) sandy loam stratified with thin layers of loam and fine sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; few fine, medium, and coarse roots; slightly effervescent; disseminated calcium carbonate; few fine soft masses of soluble salts; moderately alkaline.

The A and C horizons have hue of 10YR or 2.5Y. Reaction is slightly alkaline or moderately alkaline in the A horizon and moderately alkaline or strongly alkaline in the C horizon. The dominant texture in the C horizon is sandy loam or fine sandy loam, but this horizon is stratified with thin layers of loamy sand, loamy fine sand, sandy clay loam, or loam. The C horizon averages 10 to 18 percent clay. Some pedons are very gravelly sand below a depth of 40 inches. Electrical conductivity in the C horizon ranges from 1 to 8 millimhos per centimeter.

Clayburn Series

The Clayburn series consists of very deep, well drained soils in swales, foot slopes, and alluvial fans of mountainous areas. These soils formed in alluvium derived dominantly from various sources. Slope ranges from 2 to 15 percent. Elevation is 7,000 to 8.900 feet. The annual precipitation is 15 to 19 inches, the annual temperature 32 to 37 degrees F, and the frost-free period is less than 80 days. Frost is common in the summer months.

Typical pedon of Clayburn sandy loam in an area of Kezar-Irson-Clayburn association, hilly, 500 feet east and 1,900 feet north of the southwest corner of sec. 17, T. 40 N., R. 87 W.

A—0 to 5 inches; very dark grayish brown (10YR 3/2) sandy loam, black (10YR 2/1) moist; weak medium granular structure parting to moderate fine granular; soft, very friable, nonsticky and nonplastic; common fine and few medium and coarse roots; neutral; clear smooth boundary.

Bt1—5 to 15 inches; very dark grayish brown (10YR 3/2) sandy clay loam, black (10YR 2/1) moist; moderate coarse subangular blocky structure parting to moderate fine subangular; slightly hard, very friable, slightly sticky and slightly plastic; common fine and few medium roots; many distinct clay bridges and common distinct clay films on faces of peds; neutral; gradual wavy boundary.

Bt2—15 to 34 inches; very dark grayish brown (10YR 3/2) sandy clay loam, very dark brown (10YR 2/2) moist; moderate coarse subangular blocky structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common fine and few medium roots; many distinct clay films on faces of peds; neutral; clear wavy boundary.

C—34 to 60 inches; yellowish brown (10YR 5/4) gravelly sandy clay loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine and medium roots; 20 percent gravel; neutral.

Reaction is slightly acid or neutral throughout the profile. The A horizon has a texture of loam or sandy loam. The Bt horizon has a fine-earth texture of loam, clay loam, or sandy clay loam. It is 22 to 35 percent clay and is

0 to 20 percent rock fragments. The C horizon has a fine-earth texture of sandy loam, sandy clay loam, or loam. It is 0 to 30 percent rock fragments. Rock fragments throughout the profile are mainly gravel and cobbles.

Coalmont Series

The Coalmont series consists of moderately deep, well drained soils on terrace breaks. These soils formed in slopewash alluvium and residuum derived from shale and sandstone. Slope ranges from 2 to 20 percent. Elevation is 6,800 to 7,400 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 37 to 41 degrees F, and the frost-free period is 90 to 100 days.

Typical pedon of Coalmont loam in an area of Coalmont-Milren-Cragosen complex, rolling, 600 feet south and 1,000 feet east of the northwest corner of sec. 17, T. 32 N., R. 89 W.

A—0 to 3 inches; grayish brown (2.5Y 5/2) loam, dark grayish brown (2.5Y 4/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; slightly alkaline; abrupt smooth boundary.

Bt—3 to 17 inches; light olive brown (2.5Y 5/4) clay, olive brown (2.5Y 4/4) moist; strong medium prismatic structure parting to strong medium angular blocky; very hard, firm, very sticky and very plastic; common fine and few medium roots; many distinct clay films on faces of peds; slightly alkaline; gradual wavy boundary.

Bk—17 to 24 inches; light brownish gray (2.5Y 6/2) clay loam, grayish brown (2.5Y 5/2) moist; weak medium angular blocky structure; hard, firm, sticky and plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as many medium soft masses; moderately alkaline; gradual wavy boundary.

C—24 to 33 inches; light brownish gray (2.5Y 6/2) clay loam, grayish brown (10YR 5/2) moist; massive; hard, firm, sticky and plastic; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Cr—33 inches; soft shale interbedded with thin layers of soft sandstone.

The depth to soft bedrock ranges from 20 to 40 inches. The hue is 2.5Y or 10YR in the A horizon and 5Y to 10YR in the B and C horizons. The content of rock fragments throughout the profile ranges from 0 to 15 percent. The Bt horizon has a texture of clay or clay loam and is 35 to 50 percent clay. It has a slightly alkaline or moderately alkaline reaction.

Connerton Series

The Connerton series consists of very deep, well drained soils on alluvial fans and low terraces. These soils formed in alluvium derived from siltstone and sandstone. Slope ranges from 0 to 3 percent. Elevation is 5,700 to 6,100 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 46 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Connerton loam, 0 to 3 percent slopes, 500 feet north and 200 feet east of the southwest corner of sec. 9, T. 40 N., R. 84 W.

A—0 to 7 inches; reddish brown (5YR 5/3) loam, dark reddish brown (5YR 3/3) moist; weak medium granular structure; soft, friable, slightly sticky and slightly plastic; many fine and very fine and common medium roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bw—7 to 26 inches; reddish brown (5YR 5/4) clay loam, reddish brown (5YR 4/4) moist; moderate medium and coarse prismatic structure; hard, friable, sticky and plastic; common fine roots; strongly effervescent; disseminated calcium carbonate; strongly alkaline; clear wavy boundary.

Bk—26 to 42 inches; reddish brown (5YR 5/4) clay loam, reddish brown (5YR 4/4) moist; weak medium prismatic structure parting to weak medium subangular blocky; very hard, firm, very sticky and plastic; common medium, fine and very fine roots; strongly effervescent; calcium carbonate is disseminated and also occurs as many rounded fine soft masses; strongly alkaline; clear wavy boundary.

By—42 to 60 inches; yellowish red (5YR 5/6) sandy clay loam, yellowish red (5YR 4/6) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; slightly effervescent; disseminated calcium carbonate; few rounded fine and medium soft masses of gypsum; moderately alkaline.

The particle-size control section has a texture of loam or clay loam and is 24 to 35 percent clay. The A, Bw, and Bk horizons have hue of 5YR or 7.5YR. The By horizon has hue of 2.5YR to 7.5YR. The A horizon has a texture of loam or fine sandy loam and a slightly alkaline or moderately alkaline reaction. The By horizon has a texture of sandy clay loam, loam, or clay loam. It has a moderately alkaline or strongly alkaline reaction.

Copeman Series

The Copeman series consists of very deep, well drained soils on pediments. These soils formed in alluvium from various sources. Slope ranges from 0 to 8 percent. Elevation is 5,300 to 5,800 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

Typical pedon of Copeman loam, 0 to 8 percent slopes, 250 feet west and 1,800 feet south of the northeast corner of sec. 13, T. 33 N., R. 79 W.

A—0 to 3 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; moderate fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; moderately alkaline; clear smooth boundary.

Bw—3 to 15 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; weak medium prismatic structure parting to weak medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as thin coatings on undersides of gravel; 10 percent gravel; moderately alkaline; gradual wavy boundary.

Bk1—15 to 42 inches; very pale brown (10YR 7/3) gravelly loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as thick pendants on gravel; 20 percent gravel; strongly alkaline; gradual wavy boundary.

Bk2—42 to 60 inches; very pale brown (10YR 7/3) very gravelly loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; violently effervescent; calcium carbonate is disseminated and also occurs as thick pendants on gravel; 45 percent gravel; strongly alkaline.

The particle-size control section is 22 to 27 percent clay and averages 15 to 35 percent rock fragments. The Bw horizon is 0 to 15 percent rock fragments. The Bk horizon is 20 to 35 percent rock fragments in the upper part and 35 to 50 percent rock fragments in the lower part. The rock fragments are mainly gravel and a few cobbles and stones. Reaction in the Bk is moderately alkaline or strongly alkaline. The calcium carbonate equivalent in the Bk horizon is 15 to 30 percent.

Coutis Series

The Coutis series consists of very deep, well drained soils on mountain slopes and alluvial fans. These soils formed in slopewash alluvium derived dominantly from tuffaceous sandstone. Slope ranges from 5 to 20 percent. Elevation is 7,000 to 8,000 feet. The annual precipitation is 15 to 17 inches, the annual temperature is 33 to 37 degrees F, and the frost-free period is less than 90 days. Frost is common in the summer months.

Typical pedon of Coutis loam in an area of Leavitt-Coutis complex, 5 to 40 percent slopes, 500 feet north and 1,200 feet west of the southeast corner of sec. 6, T. 33 N., R. 88 W.

A—0 to 29 inches; dark brown (10YR 4/3) fine sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; neutral; gradual wavy boundary.

C1—29 to 44 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; massive; soft, very friable, nonsticky and nonplastic; slightly alkaline; gradual wavy boundary.

C2—44 to 60 inches; pale brown (10YR 6/3) sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; slightly alkaline.

The particle-size control section is fine sandy loam or sandy loam and 12 to 18 percent clay. The content of rock fragments ranges from 0 to 15 percent throughout the profile. The rock fragments are mainly gravel. The C horizon has a neutral or slightly alkaline reaction.

Crago Series

The Crago series consists of very deep, well drained soils on foot slopes and pediments. These soils formed in alluvium and colluvium derived from various sources. Slope ranges from 3 to 40 percent. Elevation ranges from 5,500 to 7,800 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 39 to 43 degrees F, and the frost-free period is 80 to 110 days.

Typical pedon of Crago gravelly loam, 3 to 15 percent slopes, 2,390 feet east and 2,340 feet north of the southwest corner of sec. 35, T. 33 N., R. 80 W.

A1—0 to 2 inches; dark brown (10YR 4/3) gravelly loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots; slightly effervescent; calcium carbonate is disseminated and also occurs as thin coating on undersides of gravel; 30 percent gravel and cobbles; moderately alkaline; clear wavy boundary.

A2—2 to 4 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 3/3) moist; moderate medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots; slightly effervescent; calcium carbonate is disseminated and also occurs as thin coatings on undersides of gravel; 50 percent gravel and cobbles; moderately alkaline; clear wavy boundary.

Bw—4 to 9 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common fine roots; strongly effervescent; calcium carbonate is disseminated and also occurs as moderately thick coatings on undersides of gravel; 50 percent gravel and cobbles; moderately alkaline; clear wavy boundary.

Bk1—9 to 13 inches; very pale brown (10YR 7/4) very gravelly loam, light yellowish brown (10YR 6/4) moist; massive; hard, friable, slightly sticky and slightly plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as thick pendants on gravel; 55 percent gravel and cobbles; strongly alkaline; gradual wavy boundary.

Bk2—13 to 60 inches; very pale brown (10YR 8/4) very gravelly loam, very pale brown (10YR 7/4) moist; massive; hard, friable, slightly sticky and slightly plastic; violently effervescent; calcium carbonate is disseminated and also occurs as thick pendants on gravel; 55 percent gravel and cobbles; strongly alkaline.

The particle-size control section has a fine-earth texture of loam or clay loam. It is 20 to 35 percent clay and is 35 to 60 percent rock fragments. The rock fragments are mainly gravel and cobbles. The A horizon has a slightly alkaline or moderately alkaline reaction. The Bk horizon has a moderately alkaline or strongly alkaline reaction. The calcium carbonate equivalent in the Bk horizon is 40 to 50 percent.

Cragosen Series

The Cragosen series consists of shallow, somewhat excessively drained soils on plateau breaks, terrace breaks, and hills. These soils formed in colluvium and residuum derived from various sources. Slope ranges from 5 to 45 percent. Elevation is 6,000 to 7,400 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 37 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Cragosen gravelly loam, 6 to 30 percent slopes, SW1/4SW1/4 sec. 20, T. 33 N., R. 84 W.

A—0 to 3 inches; brown (10YR 5/3) gravelly loam, dark brown (10YR 4/3) moist, weak coarse granular structure; soft, friable, slightly sticky and slightly plastic; common fine and medium roots; slightly effervescent; disseminated calcium carbonate; 15 percent gravel and 5 percent cobbles; moderately alkaline; clear smooth boundary.

Bk1—3 to 10 inches; pale brown (10YR 6/3) very gravelly loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few medium roots; violently effervescent; calcium carbonate is disseminated and also occurs as coatings on rock fragments; 40 percent gravel and 10 percent cobbles; strongly alkaline; clear smooth boundary.

Bk2—10 to 16 inches; light yellowish brown (10YR 6/4) very gravelly loam, yellowish brown (10YR 5/4) moist; massive; soft, friable, slightly sticky and slightly plastic; very few medium roots; violently effervescent; calcium carbonate is disseminated and also occurs as coatings on rock fragments; 45 percent gravel; strongly alkaline, clear wavy boundary.

Cr—16 inches; soft siltstone.

The depth to soft bedrock ranges from 10 to 20 inches. The particle-size control section has a fine earth texture of loam or sandy loam. It is 15 to 25 percent clay and averages 35 to 60 percent rock fragments. The A horizon is 15 to 50 percent rock fragments of which 15 to 45 percent is gravel and 0 to 5 percent are cobbles. The Bk horizon is 35 to 75 percent rock fragments of which 30 to 65 percent is gravel and 0 to 10 percent are cobbles.

Cragosen Variant

The Cragosen Variant consists of very shallow or shallow, somewhat excessively drained soils on hill crests. These soils formed in residuum derived from conglomerate. Slope ranges from 2 to 10 percent. Elevation is 6,700 to 7,000 feet. The average annual precipitation is 10 to 12 inches, the average annual temperature is 39 to 41 degrees F, and the frost-free period is 80 to 100 days.

Typical pedon of Cragosen Variant very gravelly sandy loam in an area of Cragosen Variant-Brownsto Variant association, hilly, 2,000 feet south and 2,400 feet west of the northeast corner of sec. 1, T. 32 N., R. 88 W.

A—0 to 2 inches; pale brown (10YR 6/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; strongly effervescent; disseminated calcium carbonate; 60 percent gravel; moderately alkaline; clear wavy boundary.

C—2 to 10 inches; brown (10YR 5/3) very gravelly sandy loam, dark brown (10YR 4/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; common fine roots; strongly effervescent; disseminated calcium carbonate; 60 percent gravel; moderately alkaline.

R—10 inches; hard conglomerate.

The depth to hard conglomerate ranges from 4 to 20 inches. The content of rock fragments ranges from 35 to 65 percent throughout the profile. The rock fragments are mainly granite gravel. Clay content ranges from 8 to 18 percent throughout the profile. Hue throughout the profile is 10YR or 7.5YR. The C horizon has a moderately alkaline or strongly alkaline reaction.

Curecanti Series

The Curecanti series consists of very deep, well drained soils on pediments and fan terraces. These soils formed in alluvium derived from various sources. Slope ranges from 3 to 12 percent. Elevation is 5,600 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Curecanti very stony loam, 3 to 12 percent slopes, 2,380 feet west and 670 feet south of the northeast corner of sec. 3, T. 32 N., R. 88 W.

A—0 to 2 inches; dark brown (10YR 4/3) very stony loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; 40 percent stones, cobbles, and gravel; neutral; clear wavy boundary.

Bt1—2 to 8 inches; dark brown (10YR 4/3) very stony loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many fine and medium roots; 50 percent stones, cobbles, and gravel; neutral; clear wavy boundary.

Bt2—8 to 14 inches; brown (10YR 5/3) very stony sandy clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; very hard, firm, sticky and plastic; common fine and medium roots; 55 percent stones, cobbles, and gravel; slightly alkaline; clear irregular boundary.

Bt3—14 to 18 inches; yellowish brown (10YR 5/4) very stony clay loam, dark yellowish brown (10YR 4/4) moist; weak medium subangular blocky structure; very hard, firm, slightly sticky and plastic; common fine and medium roots; 55 percent stones, cobbles, and gravel; slightly alkaline; clear irregular boundary.

C—18 to 60 inches; pale brown (10YR 6/3) extremely stony sandy clay loam, dark brown (10YR 4/3) moist; massive; hard, friable, slightly sticky and slightly plastic; few fine roots; 70 percent stones, cobbles, and gravel; slightly alkaline.

The Bt horizon is 23 to 35 percent clay and is 35 to 70 percent rock fragments. The C horizon has a fine-earth texture of sandy clay loam or clay loam. It is 50 to 70 percent rock fragments. Reaction in the Bt and C horizons is neutral or slightly alkaline.

Curecanti Variant

The Curecanti Variant consists of moderately deep, well drained soils on mountain foot slopes. These soils formed in colluvium and slopewash alluvium derived from various sources. Slope ranges from 8 to 35 percent. Elevation is 6,000 to 6,600 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 40 to 42 degrees F, and the frost-free period is 90 to 100 days.

Typical pedon of Curecanti Variant very cobbly loam, 8 to 35 percent slopes, 530 feet east and 2,400 feet south of the northwest corner of sec. 4, T. 32 N. R. 79 W.

A—0 to 8 inches; dark brown (10YR 4/3) very cobbly loam, very dark grayish brown (10YR 3/2) moist; moderate medium and coarse granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and common medium roots; 20 percent cobbles and 20 percent gravel; slightly alkaline; clear wavy boundary.

Bk1—8 to 21 inches; yellowish brown (10YR 5/4) very cobbly loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as common threads and seams; 35 percent cobbles and 20 percent gravel; moderately alkaline; clear wavy boundary.

2Bk2—21 to 25 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; massive; slightly hard, friable, sticky and slightly plastic; common fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as common fine threads and seams and coatings on gravel; 10 percent gravel; moderately alkaline; clear wavy boundary.

Cr—25 inches; light yellowish brown, soft platy shale.

The depth to bedrock ranges from 20 to 40 inches. The particle-size control section has a fine-earth texture of loam or clay loam and averages 24 to 35 percent clay. The content of rock fragments is 35 to 60 percent throughout the profile. Rock fragments are mainly cobbles and gravel and a few stones.

Cushman Series

The Cushman series consists of moderately deep, well drained soils on hillsides. These soils formed in slopewash alluvium and residuum derived from siltstone, sandstone, and shale. Slope ranges from 6 to 15 percent. Elevation is 5,000 to 6,000 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Cushman very fine sandy loam in an area of Cushman-Forkwood association, rolling 4,375 feet north and 300 feet east of the southwest corner of sec. 33, T. 37 N., R. 86 W.

A—0 to 3 inches; yellowish brown (10YR 5/4) very fine sandy loam, dark brown (10YR 4/3) moist; weak coarse granular structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; slightly alkaline; abrupt smooth boundary.

Bt—3 to 13 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; weak coarse prismatic structure parting to moderate medium angular blocky; hard, firm, sticky and plastic; common fine and medium roots; few distinct clay films on faces of peds; slightly alkaline; gradual smooth boundary.

Btk—13 to 19 inches; light yellowish brown (2.5Y 6/4) clay loam, olive brown (2.5Y 4/4) moist; weak medium and coarse angular blocky structure; hard, firm, sticky and plastic; few coarse roots; few faint clay films on faces of peds; violently effervescent; calcium carbonate is disseminated and also occurs as many fine and medium soft masses; moderately alkaline; gradual wavy boundary.

Bk—19 to 24 inches; light yellowish brown (2.5Y 6/4) clay loam, light olive brown (2.5Y 5/4) moist; massive; hard, firm, sticky and plastic; violently effervescent; calcium carbonate is disseminated and also occurs as many medium and coarse soft masses; moderately alkaline; clear wavy boundary.

Cr—24 inches; soft siltstone.

The depth to soft sedimentary bedrock ranges from 20 to 40 inches. The Bt and Bk horizons have hue of 10YR or 2.5Y. Reaction is neutral or slightly alkaline in the A horizon, slightly alkaline or moderately alkaline in the Bt horizon, and moderately alkaline or strongly alkaline in the Bk horizon. The Bt horizon is 28 to 35 percent clay. The Bk horizon has a texture of clay loam or loam and is 20 to 30 percent clay.

Cushman Variant

The Cushman Variant consists of moderately deep, well drained soils on hillsides. These soils formed in slopewash alluvium and residuum derived from sandstone and shale. Slope ranges from 10 to 15 percent. Elevation is 5,800 to 6,200 feet. The annual precipitation is 15 to 17 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Cushman Variant fine sandy loam in an area of Worf Variant-Cushman Variant-Peyton association, rolling, 1,950 feet south and 240 feet west of the northeast corner of sec. 9, T. 40 N., R. 77 W.

A—0 to 2 inches; brown (10YR 5/3) fine sandy loam, very dark grayish brown (10YR 3/2) moist; moderate very fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; neutral; abrupt smooth boundary.

Bt1—2 to 8 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, friable, slightly sticky and slightly plastic; many fine roots; many distinct clay bridges and a few distinct clay films on faces of peds; neutral; clear smooth boundary.

Bt2—8 to 18 inches; strong brown (7.5YR 5/6) sandy clay loam, dark brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; very hard, firm, sticky and plastic; common fine roots; many distinct clay bridges and a few distinct clay films on faces of peds; neutral; clear smooth boundary.

Bt3— 18 to 24 inches; strong brown (7.5YR 5/6) sandy clay loam, dark brown (7.5YR 4/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; very hard, firm, slightly sticky and slightly plastic; few fine roots; many distinct clay bridges and a few distinct clay films on faces of peds; neutral; clear smooth boundary.

Cr—24 inches; soft sandstone interbedded with soft red shale.

The content of rock fragments throughout the profile ranges from 0 to 15 percent. The rock fragments are mainly sandstone or ironstone channery fragments. The Bt horizon has a texture of sandy clay loam or clay loam and is 20 to 30 percent clay.

Cushool Series

The Cushool series consists of moderately deep, well drained soils on back slopes and foot slopes. These soils formed in slopewash alluvium and residuum derived from sandstone. Slope ranges from 2 to 8 percent. Elevation is 6,400 to 6,700 feet. The average annual precipitation is 10 to 12 inches, the average annual temperature is 40 to 42 degrees F, and the frost-free period is 90 to 100 days.

Typical pedon of Cushool sandy loam in an area of Cushool-Worfstone sandy loams, 2 to 15 percent slopes, 375 feet south and 375 feet east of the northwest corner of sec. 19, T. 30 N., R. 88 W.

A—0 to 2 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine and medium roots; slightly alkaline; clear wavy boundary.

Bt—2 to 14 inches; light yellowish brown (10YR 6/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate coarse prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, sticky and plastic; many fine and medium roots; many distinct clay bridges and few distinct clay films on faces of peds; slightly alkaline; clear wavy boundary.

Bk1—14 to 25 inches; very pale brown (10YR 7/3) sandy loam, pale brown (10YR 6/3) moist; massive; soft, very friable, nonsticky and nonplastic; few fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk2—25 to 29 inches; very pale brown (10YR 7/3) sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, slightly sticky and nonplastic; violently effervescent; disseminated calcium carbonate; 20 percent soft sandstone fragments; strongly alkaline; clear smooth boundary.

Cr—29 inches; soft sandstone.

The depth to soft bedrock ranges from 20 to 40 inches. The content of rock fragments in the B horizons ranges from 0 to 30 percent. The rock fragments are mainly gravel. Reaction is slightly alkaline or moderately alkaline in the Bt horizon and moderately alkaline or strongly alkaline in the Bk horizon.

Decross Series

The Decross series consists of very deep, well drained soils on foot slopes of valley sides. These soils formed in alluvium derived from limestone or sandstone. Slope ranges from 5 to 15 percent. Elevation is 7,000 to 8,200 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 35 to 39 degrees F, and the frost-free period is less than 90 days. Frost is common in the summer months.

Typical pedon of Decross loam in an area of Decross-Woosley association, sloping, 1,380 feet south and 780 feet west of the northeast corner of sec. 1, T. 40 N., R. 86 W.

A—0 to 4 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure parting to weak fine subangular blocky; soft, very friable, slightly sticky and slightly plastic; many fine and very fine roots; neutral; clear wavy boundary.

AB—4 to 8 inches; dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) moist; moderate medium angular blocky structure; soft, very friable, slightly sticky and slightly plastic; many fine and very fine roots; neutral; clear wavy boundary.

Bt1—8 to 16 inches, dark grayish brown (10YR 4/2) silty clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium angular blocky structure; slightly hard, friable, sticky and slightly plastic; many fine and very fine roots; common prominent clay films on faces of peds and lining pores; neutral; gradual wavy boundary.

Bt2—16 to 24 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; moderate medium angular blocky structure; hard, friable, sticky and plastic; common medium and fine roots; common prominent clay films on faces of peds; neutral; clear wavy boundary.

Bk1—24 to 32 inches; pale brown (10YR 6/3) clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, friable, sticky and plastic; common medium and fine roots; strongly effervescent; disseminated calcium carbonate; 5 percent limestone gravel; moderately alkaline; clear wavy boundary.

Bk2—32 to 60 inches; light yellowish brown (10YR 6/4) clay loam, dark yellowish brown (10YR 4/4) moist; massive; very hard, friable, sticky and plastic; strongly effervescent; disseminated calcium carbonate; 5 percent limestone gravel; moderately alkaline.

Reaction is neutral or slightly acid in the A horizon, neutral or slightly alkaline in the Bt horizon, and moderately alkaline or strongly alkaline in the Bk horizon. Calcium carbonate equivalent in the Bk horizon ranges from 15 to 25 percent.

The A horizon is 0 to 10 percent rock fragments. The Bt horizon has a texture of clay loam or silty clay loam. The Bt horizon is 25 to 35 percent clay and is 5 to 15 percent rock fragments. The Bk horizon has a fine-earth texture of loam or clay loam. It is 5 to 35 percent rock fragments. The rock fragments throughout the profile are mainly gravel and a few cobbles.

Delphill Series

The Delphill series consists of moderately deep, well drained soils on hills. These soils formed in residuum and slopewash alluvium derived from siltstone. Slope ranges from 5 to 15 percent. Elevation is 6,000 to 7,400 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 39 to 42 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Delphill loam in an area of Delphill-Blazon loams, 5 to 30 percent slopes, 480 feet west and 720 feet south of the northeast corner of sec. 28, T. 29 N., R. 82 N.

A—0 to 2 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; slightly effervescent;

disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

AC—2 to 8 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; weak coarse subangular blocky structure; soft, friable, slightly sticky and slightly plastic; common fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C1—8 to 20 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C2—20 to 26 inches; light yellowish brown (10YR 6/4) loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Cr—26 inches; soft siltstone.

The depth to soft bedrock ranges from 20 to 40 inches. The content of rock fragments throughout the profile ranges from 0 to 15 percent. The rock fragments are mainly angular siltstone gravel. The particle-size control section is 18 to 27 percent clay. The C horizon has a moderately alkaline or strongly alkaline reaction.

Delplain Series

The Delplain series consists of shallow, well drained soils on dip slopes. These soils formed in residuum derived from shale. Slope ranges from 3 to 30 percent. Elevation is 6,000 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Delplain very channery clay in an area of Delplain-Rock outcrop complex, 3 to 30 percent slopes, 200 feet north and 1,200 feet east of the southwest corner of sec. 21, T. 39 N., R. 85 W.

A—0 to 2 inches; brown (10YR 5/3) very channery clay, dark brown (10YR 4/3) moist; moderate fine granular structure; hard, firm, very sticky and very plastic; many fine roots; 40 percent shale channery fragments; slightly alkaline; clear smooth boundary.

Bw—2 to 5 inches; brown (10YR 5/3) very channery clay, dark brown (10YR 4/3) moist; moderate fine subangular blocky structure; hard, firm, very sticky and very plastic; common medium roots; 40 percent shale channery fragments; slightly alkaline; abrupt smooth boundary.

C—5 to 12 inches; brown (10YR 5/3) extremely channery clay, dark brown (10YR 4/3) moist; massive; hard, firm, very sticky and very plastic; few fine roots; 70 percent shale channery fragments; moderately alkaline; abrupt smooth boundary.

R—12 inches; hard fractured platy shale.

The depth to hard bedrock ranges from 10 to 20 inches. The hue is 10YR or 2.5Y throughout the profile. Reaction is neutral or slightly alkaline in the A horizon and neutral to moderately alkaline in the Bw and C horizons. Some pedons do not have a Bw horizon.

The particle-size control section averages 35 to 70 percent rock fragments. It has a fine-earth texture of clay or clay loam and is 35 to 45 percent clay. The A and Bw horizons are 35 to 60 percent rock fragments and the C horizon is 40 to 80 percent rock fragments. The rock fragments are mainly shale channery fragments.

Diamondville Series

The Diamondville series consists of moderately deep, well drained soils on hillsides. These soils formed in slopewash alluvium and residuum derived from sandstone, siltstone, and shale. Slopes range from 3 to 15 percent. Elevation is 6,000 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Diamondville fine sandy loam in an area of Diamondville-Worfman complex, 3 to 15 percent slopes, 850 feet west and 2,610 feet north of the southeast corner of sec. 36, T. 35 N., R. 89 W.

A—0 to 4 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 4/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; slightly alkaline; clear smooth boundary.

Bt1—4 to 10 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate fine angular blocky; hard, firm, sticky and plastic; common fine and medium roots; many distinct clay films on faces of peds; slightly alkaline; clear smooth boundary.

Bt2—10 to 18 inches; light olive brown (2.5Y 5/4) clay loam, olive brown (2.5Y 4/4) moist; moderate medium prismatic structure parting to moderate fine angular blocky; hard, firm, sticky and plastic; common distinct clay films on faces of peds; slightly alkaline; gradual smooth boundary.

Bk—18 to 24 inches; light brownish gray (2.5Y 6/2) loam, grayish brown (2.5Y 5/2) moist; massive; slightly hard, firm, sticky and plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as many fine and medium soft masses and seams; moderately alkaline; clear smooth boundary.

Cr—24 inches; soft shale.

The depth to soft bedrock ranges frcm 20 to 40 inches. The content of rock fragments is commonly less than 5 percent throughout the profile. Reaction is neutral or slightly alkaline in the A horizon and moderately alkaline or strongly alkaline in the Bk horizon. The Bt horizon has a texture of clay loam or loam and is 23 to 35 percent clay. The Bk horizon has hue of 2.5Y or 10YR.

Docpar Series

The Docpar series consists of very deep, well drained soils on terraces. These soils formed in alluvium derived from various sources. Slope ranges from 0 to 6 percent. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 46 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Docpar loam in an area of Urban land-Docpar complex, 0 to 6 percent slopes, 2,000 feet west and 580 feet south of the northeast corner of sec. 17, T. 33 N., R. 79 W.

Ap—0 to 6 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

Bw—6 to 18 inches; light brownish gray (10YR 6/2) loam, dark grayish brown (10YR 4/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, slightly sticky and slightly plastic; common fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bk—18 to 25 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; weak medium prismatic structure; hard, friable, slightly sticky and slightly plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as few medium soft masses; moderately alkaline; clear smooth boundary.

C—25 to 60 inches; pale brown (10YR 6/3) fine sandy loam stratified with thin layers of loamy fine sand and sand, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; slightly effervescent; disseminated calcium carbonate; strongly alkaline.

The particle-size control section averages 20 to 30 percent clay and is 0 to 15 percent rock fragments. The rock fragments throughout the profile are mainly gravel. The Bw and Bk horizons have a texture of loam or clay loam. These horizons are 24 to 35 percent clay and are 0 to 10 percent rock fragments. The dominant fine-earth texture in the 2C horizon is fine sandy loam, but thin layers with a fine-earth texture of loam, loamy sand, or sand are in most pedons. The 2C horizon averages 12 to 20 percent clay and is less than 15 percent rock fragments. In some pedons, however, thin layers in the 2C horizon have as much as 35 percent rock fragments. Reactions in the Bk and 2C horizons are moderately alkaline or strongly alkaline.

Draknab Series

The Draknab series consists of very deep, excessively drained soils on flood plains. These soils formed in alluvium derived from various sources. Slope ranges from 0 to 4 percent. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 46 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Draknab loamy fine sand, 0 to 4 percent slopes, 1,500 feet west and 1,880 feet south of the northeast corner of sec. 22, T. 33 N., R. 80 W.

A—0 to 3 inches; brown (10YR 5/3) loamy fine sand, dark brown (10YR 4/3) moist; moderate medium granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

C1—3 to 40 inches; yellowish brown (10YR 5/4) loamy sand stratified with thin layers of loamy fine sand and sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; common fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

C3—40 to 60 inches; light yellowish brown (10YR 6/4) sand stratified with thin layers of fine sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; slightly effervescent; disseminated calcium carbonate; moderately alkaline.

The particle-size control section has an average texture of loamy sand or loamy fine sand. The A horizon has a slightly alkaline or moderately alkaline reaction. The dominant texture in the C horizon is loamy sand or loamy fine sand, but this horizon is stratified with thin layers of fine sandy loam, sandy loam, sand, or fine sand. The C horizon has a moderately alkaline or strongly alkaline reaction.

Duffson Series

The Duffson series consists of moderately deep, well drained soils on broad dip slopes. These soils formed in slopewash alluvium and residuum derived from sandstone. Slope ranges from 5 to 20 percent. Elevation is 6,000 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 39 to 43 degrees F, and the frost-free period is 90 to 100 days.

Typical pedon of Duffson loam in an area of Rencot-Duffson association, rolling, 2,200 feet north and 720 feet west of the southeast corner of sec. 30, T. 41 N., R. 84 W.

A—0 to 2 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium granular structure; soft, friable, slightly sticky and slightly plastic; many fine roots, 5 percent angular sandstone gravel; neutral; clear smooth boundary.

Bt—2 to 10 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; common distinct clay films on faces of peds; 10 percent angular sandstone gravel; slightly alkaline; clear wavy boundary.

Btk—10 to 22 inches; very pale brown (10YR 7/3) loam, brown (10YR 5/3) moist; weak fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; few distinct clay films on faces of peds; violently effervescent; disseminated calcium carbonate; 15 percent angular sandstone gravel; moderately alkaline; abrupt smooth boundary.

R—22 inches; hard sandstone.

The depth to hard bedrock ranges from 20 to 40 inches. Rock fragments throughout the profile are mainly angular sandstone gravel. The hue is 10YR or 7.5YR throughout the profile. The A horizon has a neutral or slightly alkaline reaction. The Bt horizon has a texture of clay loam or loam. The Bt horizon is 23 to 32 percent clay and is 0 to 15 percent rock fragments.

Some pedons have a Bk horizon. It is loam or clay loam and 5 to 15 percent rock fragments. It has a moderately alkaline or strongly alkaline reaction.

Edlin Series

The Edlin series consists of very deep, well drained soils on hillsides, alluvial fans, and terraces. These soils formed in alluvium derived dominantly from sandstone. Slope ranges from 2 to 30 percent. Elevation is 5,800 to 7,200 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 38 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Edlin fine sandy loam in an area of Edlin-Rock River-Bosler complex, 3 to 30 percent slopes, 350 feet south and 440 feet east of the northwest corner of sec. 33, T. 32 N., R. 86 W.

A—0 to 3 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; slightly alkaline; clear wavy boundary.

Bw—3 to 15 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 4/3) moist; weak coarse prismatic structure parting to weak medium subangular blocky; slightly hard, friable, nonsticky and nonplastic; common fine and medium roots; moderately alkaline; clear wavy boundary.

Bk—15 to 60 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; few fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

Reaction is slightly alkaline or moderately alkaline in the Bw horizon and moderately alkaline or strongly alkaline in the Bk horizon. Calcium carbonate equivalent in the Bk horizon is 8 to 20 percent. The Bw horizon has a texture of fine sandy loam or sandy loam. The Bk horizon commonly has a texture of fine sandy loam or sandy loam, but in some pedons it is loamy sand below a depth of 40 inches. The Bk horizon is 0 to 10 percent rock fragments. The rock fragments are mainly fine gravel.

Effington Series

The Effington series consists of very deep, well drained soils on alluvial fans and terraces. These soils formed in alluvium derived dominantly from sodic shale. Slope ranges from 0 to 6 percent. Elevation is 5,800 to 6,200 feet. The annual precipitation is 7 to 9 inches, the annual temperature is 44 to 46 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Effington silty clay loam in an area of Effington-Uffens complex, 0 to 6 percent slopes, 2,200 feet south and 2,200 feet west of the northeast corner sec. 22, T. 37 N., R. 87 W.

A—0 to 2 inches; light brownish gray (2.5Y 6/2) silty clay loam, dark grayish brown (2.5Y 4/2) moist; moderate fine granular structure; slightly hard, firm, sticky and plastic; few fine, medium and coarse roots; slightly effervescent; disseminated calcium carbonate; strongly alkaline; abrupt smooth boundary.

Btn1—2 to 4 inches; light olive brown (2.5Y 5/4) silty clay loam, olive brown (2.5Y 4/4) moist; weak fine angular blocky structure; hard, firm, sticky and plastic; few fine, medium and coarse roots; few faint clay films on faces of peds; slightly effervescent; disseminated calcium carbonate; very strongly alkaline; clear smooth boundary.

Btn2—4 to 10 inches; light brownish gray (10YR 6/2) silty clay loam, dark grayish brown (10YR 4/2) moist; moderate medium prismatic structure parting to moderate medium and fine angular blocky; extremely hard, very firm, very sticky and very plastic; few coarse roots; many faint and few distinct clay films on faces of peds; slightly effervescent; disseminated calcium carbonate; very strongly alkaline; clear smooth boundary.

Btkn—10 to 18 inches; light brownish gray (10YR 6/2) silty clay, olive brown (2.5Y 4/4) moist; weak medium angular blocky structure; very hard, very firm, sticky and plastic; few faint clay films on faces of peds; violently effervescent; calcium carbonate is disseminated and also occurs as a few fine soft masses; very strongly alkaline; gradual wavy boundary.

Bknyz1—18 to 30 inches; pale olive (5Y 6/3) silty clay loam, olive (5Y 4/3) moist; massive; very hard, very firm, sticky and plastic; violently effervescent; calcium carbonate is disseminated and also occurs as a few fine and medium soft masses; few fine and medium soft masses of gypsum and other salts; very strongly alkaline; gradual wavy boundary.

Bknyz2—30 to 44 inches; light olive gray (5Y 6/2) silty clay loam, olive gray (5Y 4/2) moist; massive; very hard, very firm, sticky and plastic; violently effervescent; calcium carbonate is disseminated and also occurs as common fine and medium soft masses; common fine and medium soft masses of gypsum and other salts; very strongly alkaline; gradual wavy boundary.

Bknyz3—44 to 60 inches; light olive gray (5Y 6/2) silty clay loam, olive (5Y 4/3) moist; massive; hard, firm, sticky and plastic; violently effervescent; calcium carbonate is disseminated and also occurs as common fine and medium soft masses; common fine and medium soft masses of gypsum and other salts; strongly alkaline.

The hue is 10YR or 2.5Y in the A and Btn horizons and 5Y to 10YR in the Bknyz horizon. Reaction is moderately alkaline or strongly alkaline in the A horizon and strongly alkaline or very strongly alkaline in the Bknyz horizon. Exchangeable sodium is 15 to 30 percent in the Btn horizon and 15 to 40 percent in the Bknyz horizon. Electrical conductivity is 4 to 16 millimhos per centimeter in the Btn horizon and 8 to 16 millimhos per centimeter in the Bknyz horizon.

The Btn horizon has a texture of clay loam, silty clay loam, silty clay, or clay and is 35 to 45 percent clay. The Bknyz horizon has a texture of silty clay loam, clay loam, or loam.

Elk Mountain Series

The Elk Mountain series consists of moderately deep, well drained soils on hillsides. These soils formed in slopewash alluvium and residuum derived from sandstone. Slope ranges from 6 to 15 percent. Elevation is 6,500 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 100 to 110 days.

Typical pedon of Elk Mountain sandy loam in an area of Ryan Park-Elk Mountain complex, 3 to 15 percent slopes, SE¼NE¼ sec. 1, T. 34 N., R. 89 W.

A—0 to 2 inches; light brownish gray (10YR 6/2) sandy loam, very dark grayish brown (10YR 3/2) moist; weak medium granular structure; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots; neutral; clear smooth boundary.

Bt—2 to 9 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; few medium and coarse roots; many distinct clay bridges on faces of peds; slightly alkaline; clear smooth boundary.

Btk—9 to 16 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; weak medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few coarse roots; common distinct clay bridges on faces of peds; strongly effervescent; calcium carbonate is disseminated and also occurs as common medium and coarse soft masses; moderately alkaline; clear smooth boundary.

Bk—16 to 23 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 4/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few coarse roots; violently effervescent; calcium carbonate is disseminated and also occurs as common medium and coarse soft masses; moderately alkaline; clear wavy boundary.

Cr—23 inches; soft sandstone.

The depth to soft bedrock ranges from 20 to 40 inches. The content of rock fragments ranges from 0 to 15 percent throughout the profile. The A horizon has a neutral or slightly alkaline reaction. The Bk horizon has a texture of sandy loam or loamy sand. It has a moderately alkaline or strongly alkaline reaction. Calcium carbonate equivalent in the Bk horizon ranges from 5 to 12 percent.

Emblem Series

The Emblem series consists of very deep, well drained soils on alluvial fans and terraces. These soils formed in alluvium from various sources. Slope ranges from 0 to 6 percent. Elevation is 5,500 to 6,400 feet. The annual precipitation is 7 to 9 inches, the annual temperature is 44 to 46 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Emblem fine sandy loam in an area of Griffy-Emblem fine sandy loams, 0 to 6 percent slopes, SW¼SW¼ sec. 1, T. 37 N., R. 87 W.

A—0 to 3 inches; pale brown (10YR 6/3) fine sandy loam, dark brown (10YR 4/3) moist; weak fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bk1—3 to 8 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; weak medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common medium and few coarse roots; violently effervescent; calcium carbonate is disseminated and also occurs as common fine and medium soft masses; moderately alkaline; clear smooth boundary.

Bk2—8 to 17 inches; very pale brown (10YR 7/3) loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few coarse roots; violently effervescent; calcium carbonate is disseminated and also occurs as many fine and medium soft masses; strongly alkaline; clear smooth boundary.

Bk3—17 to 26 inches; very pale brown (10YR 7/3) gravelly sandy clay loam, grayish brown (10YR 5/2) moist; massive; hard, friable, sticky and plastic; very few coarse roots; violently effervescent; calcium carbonate is disseminated and also occurs as many coarse soft masses; 20 percent gravel; strongly alkaline; gradual wavy boundary.

Bk—26 to 60 inches; light yellowish brown (10YR 6/4) very gravelly loamy sand, yellowish brown (10YR 5/4) moist; massive; slightly hard, loose, nonsticky and nonplastic; violently effervescent; calcium carbonate is disseminated and also occurs as thick pendants on gravel; 40 percent gravel; moderately alkaline.

Rock fragments are mainly gravel throughout the profile. The Bk horizon has a fine-earth texture of loam or sandy clay loam. It is 0 to 25 percent rock fragments. Calcium carbonate equivalent in this horizon ranges from 15 to 30 percent. Reactions in the Bk and 2Bk horizons are moderately alkaline or strongly alkaline.

The 2Bk horizon has hue of 7.5YR or 10YR. It has a fine- earth texture of loamy sand or sand and is 35 to 70 percent rock fragments. Calcium carbonate equivalent in the 2Bk horizon is 15 to 30 percent in the upper part and 10 to 25 percent in the lower part. The depth to the 2Bk horizon ranges from 15 to 26 inches.

Enos Series

The Enos series consists of moderately deep, well drained soils on hillsides. These soils formed in slopewash alluvium derived from sandstone. Slope ranges from 6 to 15 percent. Elevation is 5,800 to 6,200 feet. The annual precipitation is 7 to 9 inches, the annual temperature is 44 to 46 degrees, and the frost-free period is 110 to 120 days.

Typical pedon of Enos loamy sand in an area of Enos-Wallson association, rolling, NW¼SE¼ sec. 18, T. 37 N., R. 87 W.

A—0 to 2 inches; pale brown (10YR 6/3) loamy sand, dark brown (10YR 4/3) moist; weak coarse granular structure; soft, very friable, nonsticky and nonplastic; many fine and medium roots; neutral; clear smooth boundary.

Bt1—2 to 5 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; moderate fine prismatic structure parting to moderate medium angular blocky; slightly hard, friable, slightly sticky and slightly plastic; common coarse roots; many distinct clay bridges on faces of peds; neutral; clear smooth boundary.

Bt2—5 to 10 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to weak medium angular blocky; slightly hard, friable, slightly sticky and slightly plastic; few medium and coarse roots; many distinct clay bridges on faces of peds; slightly alkaline; clear smooth boundary.

Bt3—10 to 15 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; weak coarse prismatic structure parting to weak coarse angular blocky; soft, very friable, slightly sticky and slightly plastic; common fine and medium and few coarse roots; common distinct clay bridges on faces of peds; slightly alkaline; clear wavy boundary.

Btk—15 to 21 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 4/3) moist; weak coarse angular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; few medium and coarse roots; few distinct clay bridges on faces of peds; violently effervescent; calcium carbonate is disseminated and also occurs as many fine and medium soft masses and seams; strongly alkaline; clear wavy boundary.

Bk—21 to 34 inches; pale brown (10YR 6/3) sandy loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few coarse roots; violently effervescent; calcium carbonate is disseminated and also occurs as many fine and medium and few coarse soft masses; strongly alkaline.

Cr—34 inches; soft sandstone.

The depth to soft bedrock ranges from 20 to 40 inches. The A and Bt horizons have a neutral or slightly alkaline reaction. The Bt horizon is mainly sandy loam, but in some pedons the upper part is sandy clay loam. The Bt horizon averages 10 to 18 percent clay. The Bk horizon is sandy loam or loamy sand. The Bk horizon has a moderately alkaline or strongly alkaline reaction.

Farlow Series

The Farlow series consists of deep or very deep, well drained soils on mountain slopes and hills. These soils formed in colluvium derived dominantly from limestone and sandstone. Slope ranges from 15 to 65 percent. Elevation is 6,500 to 8,700 feet. The annual precipitation is 15 to 25 inches, the annual temperature is 32 to 37 degrees F, and the frost-free period is less than 80 days. Frost is common in the summer months.

Typical pedon of Farlow cobbly loam in an area of Farlow-Starley association, moderately steep, 1,250 feet north and 1,100 feet west of the southeast corner of sec. 25, T. 40 N., R. 87 W.

A—0 to 4 inches; dark brown (10YR 4/3) cobbly loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; 20 percent rock fragments, mainly cobbles; neutral; clear wavy boundary.

AB—4 to 8 inches; dark brown (10YR 4/3) cobbly loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; strongly effervescent; disseminated calcium carbonate; 20 percent rock fragments, mainly cobbles; moderately alkaline; clear wavy boundary.

Bw—8 to 17 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; violently effervescent; calcium carbonate is disseminated and also occurs as moderately thick coatings on undersides of rock fragments; 35 percent rock fragments, mainly cobbles; strongly alkaline; gradual wavy boundary.

Bk—17 to 50 inches; very pale brown (10YR 7/4) very cobbly loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, sticky and plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as many coarse soft masses and thick pendants on rock fragments; 40 percent rock fragments, mainly cobbles; strongly alkaline; abrupt smooth boundary.

R—50 inches; hard fractured limestone.

The depth to hard fractured limestone ranges from 40 to more than 60 inches. The particle-size control section has a fine-earth texture of loam or clay loam and is 20 to 35 percent clay. The content of rock fragments in the particle-size control section averages 35 to 80 percent. The rock fragments throughout the profile are mainly angular limestone cobbles or gravel and a few stones.

The A and Bw horizons are 15 to 80 percent rock fragments. Reactions are neutral to moderately alkaline in the A horizon and slightly alkaline to strongly alkaline in the Bw horizon. The Bk horizon has a calcium carbonate equivalent of 20 to 40 percent and a moderately alkaline or strongly alkaline reaction. The Bk horizon is 35 to 80 percent rock fragments.

Fiveoh Series

The Fiveoh series consists of very deep, well drained soils on alluvial fans and foot slopes. These soils formed in alluvium derived dominantly from sandstone and siltstone. Slope ranges from 6 to 15 percent. Elevation is 6,200 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 100 to 110 days.

Typical pedon of Fiveoh loam in an area of Fiveoh-Thermopolis association, hilly, 500 feet north and 1,000 feet west of the southeast corner of sec. 3, T. 33 N., R. 88 W.

A—0 to 5 inches; reddish brown (5YR 4/4) loam, dark reddish brown (5YR 3/4) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline, clear wavy boundary.

Bk1—5 to 15 inches; reddish brown (5YR 5/4) loam, reddish brown (5YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; violently effervescent; calcium carbonate is disseminated and also occurs as many faint coatings on faces of peds and as few fine soft masses; 5 percent gravel; strongly alkaline; gradual wavy boundary.

Bk2—15 to 28 inches; red (2.5YR 5/6) loam, reddish brown (2.5YR 4/4) moist; massive; hard, friable, slightly sticky and slightly plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as many fine threads; 5 percent gravel; strongly alkaline; gradual wavy boundary.

C—28 to 60 inches; red (2.5YR 5/6) loam, reddish brown (2.5YR 4/4) moist; massive; hard, friable, slightly sticky and slightly plastic; violently effervescent; disseminated calcium carbonate; 5 percent gravel; strongly alkaline.

The particle-size control section is loam or fine sandy loam. It is 12 to 18 percent noncarbonate clay and is 2 to 10 percent calcium carbonate clay. The content of rock fragments ranges from 0 to 15 percent throughout the profile. The rock fragments are mainly gravel. Reactions in the Bk and C horizons are moderately alkaline or strongly alkaline. The Bk horizon has a calcium carbonate equivalent of 15 to 25 percent. The C horizon has hue of 2.5YR or 5YR. Some pedons have a few fine threads and soft masses of gypsum in the C horizon.

Forelle Series

The Forelle series consists of very deep, well drained soils on plateaus, fan terraces, foot slopes and alluvial fans. These soils formed in alluvium derived from various sources. Slope ranges from 2 to 10 percent. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 39 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Forelle loam in an area of Forelle-Diamondville complex, 3 to 15 percent slopes, 2,170 feet north and 1,550 feet east of the southwest corner of sec. 2, T. 34 N., R. 89 W.

A—0 to 3 inches; brown (10YR 5/3) loam, very dark grayish brown (10YR 3/2) moist; weak coarse granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine roots; slightly alkaline; clear smooth boundary.

Bt1—3 to 8 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to weak medium angular blocky; hard, firm, sticky and plastic; many fine roots; few faint clay films on vertical faces of peds; slightly alkaline; clear smooth boundary.

Bt2—8 to 19 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium angular blocky; very hard, firm, sticky and plastic; common medium roots; many faint and few distinct clay films on faces of peds; slightly alkaline; clear smooth boundary.

Btk—19 to 25 inches; light brownish gray (2.5Y 6/2) clay loam, dark grayish brown (2.5Y 4/2) moist; moderate medium angular blocky structure; very hard, firm, sticky and plastic; few coarse roots; common faint clay films on faces of peds; violently effervescent; calcium carbonate is disseminated and also occurs as common fine soft masses; moderately alkaline; clear wavy boundary.

Bk1—25 to 42 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; massive; very hard, firm, sticky and plastic; violently effervescent; calcium carbonate is disseminated and also occurs as many medium soft masses; moderately alkaline; clear wavy boundary.

Bk2— 42 to 60 inches; pale brown (10YR 6/3) loam, dark yellowish brown (10YR 4/4) moist; massive; hard, firm, sticky and plastic; violently effervescent; calcium carbonate is disseminated and also occurs as many medium seams; moderately alkaline.

The A and Bt horizons have a neutral or slightly alkaline reaction. The Bt horizon has a texture of loam or clay loam. It is 20 to 35 percent clay and is 15 to 35 percent fine sand and coarser sand. The Bk and C horizons have hue of 10YR or 2.5Y. The textures in these horizons commonly are loam or clay loam, but in some pedons it is sandy clay loam or sandy loam. Reactions in these horizons are moderately alkaline or strongly alkaline.

Forkwood Series

The Forkwood series consists of very deep, well drained soils on alluvial fans, terraces, and foot slopes. These soils formed in alluvium from various sources. Slope ranges from 0 to 12 percent. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Forkwood loam in an area of Cushman-Forkwood association, rolling, 780 feet west and 420 feet north of the southeast corner of sec. 36, T. 38 N., R. 80 W.

A—0 to 3 inches; pale brown (10YR 6/3) loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; many fine roots; neutral; clear smooth boundary.

Bt1—3 to 9 inches; yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure parting to strong medium angular blocky; hard, friable, slightly sticky and slightly plastic; common fine roots; many distinct clay films on faces of peds; neutral; clear smooth boundary.

Bt2—9 to 22 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure parting to strong medium angular blocky; very hard, firm, sticky and plastic; common fine roots; many prominent clay films on faces of peds; slightly alkaline; clear smooth boundary.

Btk—22 to 28 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; strong medium prismatic structure parting to strong medium angular blocky;

very hard, firm, sticky and plastic; common fine roots; many distinct clay films on faces of peds; strongly effervescent; disseminated calcium carbonate; strongly alkaline; clear smooth boundary.

Bk—28 to 41 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; massive; hard, friable, slightly sticky and slightly plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as many fine threads and seams; strongly alkaline; gradual smooth boundary.

C—41 to 60 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; massive; hard, friable, slightly sticky and slightly plastic; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

The hue is 10YR or 2.5Y throughout the profile. Reaction is neutral or slightly alkaline in the A horizon, neutral to moderately alkaline in the Bt horizon, and moderately alkaline or strongly alkaline in the Bk and C horizons. The Bt horizon has a texture of clay loam or loam. It is 25 to 35 percent clay and is 15 to 35 percent fine sand and coarser sand. The texture in the Bk horizon is commonly loam, but in some pedons it is clay loam. Some pedons do not have a C horizon above a depth of 60 inches.

Foxton Series

The Foxton series consists of moderately deep, well drained soils on mountain slopes. These soils formed in slopewash alluvium and residuum derived from sandstone and limestone. Slope ranges from 4 to 10 percent. Elevation is 7,700 to 8,100 feet. The annual precipitation is 25 to 35 inches, the annual temperature is 32 to 36 degrees F, and the frost-free period is less than 70 days. Frost is common in the summer months.

Typical pedon of Foxton fine sandy loam in an area of Alflack-Foxton complex, 4 to 25 percent slopes, 1,700 feet south and 1,400 feet west of the northeast corner of sec. 14, T. 32 N., R. 79 W.

Oi—2 inches to 0; slightly decomposed pine needles and other forest litter.

A—0 to 3 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure parting to moderate medium granular; slightly hard, friable, slightly sticky and slightly plastic; common fine, medium, and coarse roots; slightly acid; clear wavy boundary.

E—3 to 12 inches; light yellowish brown (10YR 6/4) cobbly loam, dark yellowish brown (10YR 4/4) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common medium and coarse roots; 30 percent rock fragments; slightly acid; gradual wavy boundary.

Bt1—12 to 21 inches; yellowish brown (10YR 5/6) cobbly clay, dark yellowish brown (10YR 4/4) moist; strong medium and coarse angular blocky structure; hard, very firm, very sticky and very plastic; common medium and coarse roots; many prominent clay films on faces of peds and rock fragments; 20 percent rock fragments; slightly acid; clear wavy boundary.

Bt2—21 to 34 inches; yellowish brown (10YR 5/6) cobbly clay, dark yellowish brown (10YR 4/6) moist; moderate coarse angular blocky structure; very hard, very firm, very sticky and very plastic; common fine roots; common distinct clay films on faces of peds and rock fragments; 30 percent rock fragments; neutral; abrupt wavy boundary.

R—34 inches; hard, fine grained sandstone.

The depth to hard bedrock ranges from 20 to 40 inches. The hue is 7.5YR or 10YR throughout the profile. Rock fragments throughout the profile are mainly cobbles and gravel. Reaction is slightly acid or neutral throughout the profile. The E horizon has a fine-earth texture of loam or fine sandy loam. It is 10 to 25 percent rock fragments. The Bt horizon has a fine-earth texture of clay or clay loam. It is 35 to 50 percent clay and is 10 to 30 percent rock fragments.

Foxton Variant

The Foxton Variant consists of deep, well drained soils on mountain foot slopes. These soils formed in slopewash alluvium and residuum derived dominantly from sandstone and conglomerate. Slopes range from 3 to 8 percent. Elevation is 7,200 to 8,300 feet. The annual precipitation is 25 to 35 inches, the annual air temperature is 33 to 36 degrees F, and the frost-free period is less than 90 days. Frost is common in the summer months.

Typical pedon of Foxton Variant loam in an area of Alflack-Irson-Foxton Variant complex, 3 to 20 percent slopes, about 2,000 feet north and 1,750 feet east of the southwest corner of sec. 12, T. 31 N., R. 79 W.

Oe—1 inch to 0; partially decomposed pine needles.

A—0 to 2 inches; brown (10YR 4/3) loam, dark brown (10YR 3/3) moist; moderate medium granular structure; slightly hard, firm, slightly sticky and slightly plastic; many coarse and few medium roots; slightly acid; abrupt smooth boundary.

E—2 to 7 inches; very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; weak coarse angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many coarse and few medium roots; moderately acid; clear smooth boundary.

E/B—7 to 16 inches; 80 percent very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist, 20 percent yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist; weak coarse angular blocky structure; slightly hard, friable, sticky and plastic; few coarse roots; moderately acid; clear smooth boundary.

B/E— 16 to 28 inches; 60 percent yellowish brown (10YR 5/4) loam, dark yellowish brown (10YR 4/4) moist, 40 percent very pale brown (10YR 7/3) very fine sandy loam, brown (10YR 5/3) moist; moderate medium angular blocky structure; hard, firm, sticky and plastic; few faint clay films on faces of peds; 10 percent angular sandstone gravel; slightly acid; clear smooth boundary.

Bt1—28 to 40 inches; brown (7.5YR 5/4) clay loam, dark brown (7.5YR 4/4) moist; moderate medium angular blocky structure; hard, firm, sticky and plastic; common distinct clay films on faces of peds; 15 percent angular sandstone gravel; slightly acid; clear smooth boundary.

Bt2—40 to 46 inches; brown (7.5YR 5/4) clay loam, dark brown (7.5YR 4/4) moist; weak medium angular blocky structure; slightly hard, firm, sticky and plastic; few faint clay films on faces of peds; 15 percent angular sandstone gravel; neutral; abrupt wavy boundary.

R—46 inches; hard sandstone.

The depth to hard bedrock ranges from 40 to 50 inches. Reaction is slightly acid or moderately acid in the E horizon and slightly acid or neutral in the Bt horizon. The E horizon has a texture of very fine sandy loam or loam. The Bt horizon has hue of 7.5YR or 10YR. It is 10 to 25 percent rock fragments. The rock fragments are mainly gravel.

Frontier Series

The Frontier series consists of shallow, well drained soils on dip slopes. These soils formed in residuum derived from sandstone. Slope ranges from 6 to 15 percent. Elevation is 5,500 to 6,700 feet. The annual precipitation is 10 to 14 inches and the annual temperature is 42 to 47 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Frontier sandy loam in an area of Threetop-Sunup-Frontier complex, 3 to 20 percent slopes, 880 feet south and 2,500 feet east of the northwest corner of sec. 6, T. 37 N., R. 85 W.

A—0 to 4 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; moderate fine granular structure; soft, friable, nonsticky and nonplastic; many fine roots; slightly alkaline; clear wavy boundary.

Bt1—4 to 9 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 4/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; common distinct clay bridges and few faint clay films on faces of peds; slightly alkaline; clear wavy boundary.

Bt2—9 to 14 inches; light brown (7.5YR 6/4) clay loam, dark brown (7.5YR 4/4) moist; weak medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; common fine roots concentrated along vertical faces of peds; common distinct clay films on faces of peds; slightly effervescent; disseminated calcium carbonate; 10 percent angular sandstone gravel; moderately alkaline; clear wavy boundary.

Btk—14 to 17 inches; light brown (7.5YR 6/4) clay loam, dark brown (7.5YR 4/4) moist; weak medium prismatic structure parting to moderate medium subangular blocky; very hard, firm, sticky and plastic; common fine roots concentrated along vertical faces of peds; few distinct clay films on faces of peds and rock fragments; violently effervescent; few fine threads and soft masses of calcium carbonate; 10 percent angular sandstone gravel; strongly alkaline; abrupt smooth boundary.

R—17 inches; hard argillaceous sandstone.

The depth to hard bedrock ranges from 10 to 20 inches. The A and Bt horizons have a slightly alkaline or moderately alkaline reaction. The Bt horizon has hue of 7.5YR or 10YR. The Bt and Btk horizons have a fine-earth texture of sandy clay loam or clay loam. The Bt horizon is 25 to 35 percent clay and is 30 to 60 percent fine sand and coarser sand. The content of rock fragments in the Bt and Btk horizons is commonly less than 15 percent, but in some pedons it is 15 to 30 percent. The rock fragments are mainly angular sandstone gravel. Reaction in the Btk horizon is moderately alkaline or strongly alkaline. The calcium carbonate equivalent in the Btk horizon is 5 to 15 percent.

Gateridge Series

The Gateridge series consists of shallow, well drained soils on hillsides. These soils formed in residuum derived from sandstone and shale. Slope ranges from 10 to 45 percent. Elevation is 5,800 to 6,200 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 40 to 42 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Gateridge fine sandy loam in an area of Gateridge-Taluce Variant association, steep, 1,850 feet north and 2,220 feet west of the southeast corner of sec. 22, T. 22 N., R. 77 W.

Oi—3 inches to 0; slightly decomposed pine needles and other forest litter.

E—0 to 5 inches; very pale brown (10YR 7/3) fine sandy loam, dark brown (10YR 4/3) moist; weak thin platy structure; slightly hard, very friable, nonsticky and nonplastic; common medium and coarse roots; neutral; clear smooth boundary.

Bt—5 to 14 inches; brown (7.5YR 5/4) sandy clay loam, dark brown (7.5YR 4/4) moist; moderate medium angular blocky structure; very hard, friable, sticky and plastic; common medium and coarse roots; few distinct clay films on faces of peds; neutral; clear wavy boundary.

2C—14 to 19 inches; light red (2.5YR 6/6) clay, red (2.5YR 5/6) moist; massive; extremely hard, firm, very sticky and very plastic; few medium roots; neutral; abrupt smooth boundary.

3Cr—19 inches; soft yellowish brown sandstone interbedded with soft red shale.

The depth to bedrock ranges from 15 to 20 inches. The content of rock fragments throughout the profile ranges from 0 to 15 percent. The rock fragments are mainly ironstone and sandstone channery fragments and flagstones. The 2C horizon has hue of 2.5YR or 5YR. A few pedons do not have a 2C horizon.

Greybull Series

The Greybull series consists of moderately deep, well drained soils on hillsides. These soils formed in slopewash alluvium and residuum derived from shale. Slope ranges from 6 to 15 percent. Elevation is 5,700 to 6,200 feet. The annual precipitation is 7 to 9 inches, the annual air temperature is 45 to 47 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Greybull loam in an area of Persayo-Greybull association, 6 to 30 percent slopes, 300 feet east of the center of sec. 15, T. 37 N., R. 89 W.

A—0 to 2 inches; light brownish gray (2.5Y 6/2) loam, dark grayish brown (2.5Y 4/2) moist; weak medium and coarse granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

AC—2 to 5 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; weak medium and coarse angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C1—5 to 17 inches; light brownish gray (2.5Y 6/2) clay loam, dark grayish brown (2.5Y 4/2) moist; massive; hard, firm, sticky and plastic; few medium roots; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C2— 17 to 24 inches; light yellowish brown (2.5Y 6/4) sandy clay loam, olive brown (2.5Y 4/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; very few medium roots; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Cr—24 inches; soft sandy shale.

The depth to soft bedrock ranges from 20 to 40 inches. The particle-size control section is loam, clay loam, or sandy clay loam and 25 to 35 percent clay. The hue is 2.5Y or 10YR throughout the profile. The C horizon has a moderately alkaline or strongly alkaline reaction.

Griffy Series

The Griffy series consists of very deep, well drained soils on hills, terraces, and alluvial fans. These soils formed in alluvium derived from various sources. Slope ranges from 0 to 15 percent. Elevation is 5,500 to 6,500 feet. The annual precipitation is 7 to 9 inches, the annual temperature is 44 to 46 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Griffy sandy loam, 2 to 15 percent slopes, 1,880 feet east and 200 feet south of the northwest corner of sec. 19, T. 38 N., R. 88 W.

A—0 to 2 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 4/3) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; slightly alkaline; clear smooth boundary.

Bt1—2 to 12 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, firm, sticky and plastic; common fine roots mainly on vertical faces of peds; many distinct clay films on faces of peds; slightly alkaline; clear smooth boundary.

Bt2—12 to 18 inches; yellowish brown (10YR 5/4) sandy clay loam, dark brown (10YR 4/3) moist; weak coarse prismatic structure parting to moderate medium angular blocky; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; many distinct clay bridges and few distinct clay films on faces of peds; slightly alkaline; clear smooth boundary.

Btk—18 to 24 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 4/3) moist; weak coarse angular blocky structure; slightly hard, very friable, slightly sticky and slightly plastic; common distinct clay bridges on faces of peds; violently effervescent; calcium carbonate is disseminated and also occurs as common fine seams; moderately alkaline; clear smooth boundary.

Bk—24 to 32 inches; light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; violently effervescent; calcium carbonate is disseminated and also occurs as common medium and coarse seams; moderately alkaline; clear smooth boundary.

C—32 to 60 inches; pale brown (10YR 6/3) loamy sand, dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; slightly effervescent; calcium carbonate is disseminated and also occurs as few fine and medium seams; moderately alkaline.

The content of rock fragments ranges from 0 to 15 percent throughout the profile. The rock fragments are mainly gravel. The Bk and C horizons have hue of 10YR or 2.5Y. Reactions are slightly alkaline or moderately alkaline in the Bt horizon and moderately alkaline or strongly alkaline in the Bk and C horizons.

The Bt horizon is 20 to 30 percent clay. The texture in the Bk horizon is commonly sandy loam, but in some pedons it is fine sandy loam. The C horizon has a texture of loamy sand, sandy loam, or fine sandy loam. Some pedons do not have a C horizon above a depth of 60 inches.

Grimstone Series

The Grimstone series consists of moderately deep, well drained soils on mountain slopes. These soils formed in slopewash alluvium and residuum derived from crystalline rocks. Slope ranges from 4 to 35 percent. Elevation is 7,700 to 8,100 feet. The annual precipitation is 25 to 35 inches, the annual temperature is 32 to 36 degrees F, and the frost-free period is less than 70 days. Frost is common in the summer months.

Typical pedon of Grimstone loam in an area of Grimstone-Grimstone Variant complex, 4 to 35 percent slopes, 600 feet north and 50 feet west of the southeast corner of sec. 17, T. 32 N., R. 79 W.

Oi—1 inch to 0; slightly decomposed pine needles and other forest litter.

A—0 to 4 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; weak coarse platy structure; slightly hard, firm, slightly sticky and slightly plastic; common fine medium, and coarse roots; slightly acid; clear smooth boundary.

E—4 to 16 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common medium and coarse roots; many mica flakes; slightly acid; gradual wavy boundary.

Bt—16 to 26 inches; yellowish brown (10YR 5/6) clay loam, dark yellowish brown (10YR 4/6) moist; moderate medium and coarse subangular blocky structure; hard, firm, slightly sticky and plastic; few fine roots; common distinct and few prominent clay films on faces of peds; 10 percent gravel; many mica flakes; slightly acid; gradual wavy boundary.

Cr—26 inches; soft micaceous schist.

The depth to bedrock ranges from 20 to 40 inches. Mica flakes are abundant throughout the profile. Reaction is moderately acid or slightly acid throughout the profile. Rock fragments throughout the profile are mainly gravel and a few cobbles. The Bt horizon is 28 to 35 percent clay and is 0 to 25 percent rock fragments.

Grimstone Variant

The Grimstone Variant consists of moderately deep, well drained soils on mountain slopes. These soils formed in slopewash alluvium and residuum derived from crystalline rocks. Slope ranges from 4 to 35 percent. Elevation is 7,700 to 8,100 feet. The annual precipitation is 25 to 35 inches, the annual temperature is 32 to 36 degrees F, and the frost-free period is less than 70 days. Frost is common in the summer months.

Typical pedon of Grimstone Variant loam in an area of Grimstone-Grimstone Variant complex, 4 to 35 percent slopes, 1,370 feet west and 2,380 feet north of the southeast corner of sec. 17, T. 32 N., R. 79 W.

Oi—1 inch to 0; slightly decomposed pine needles and other forest litter.

A—0 to 1 inch; dark brown (10YR 4/3) loam, dark brown (10YR 3/3) moist; weak medium platy structure; soft, friable, slightly sticky and slightly plastic; common fine, medium, and coarse roots; slightly acid; clear smooth boundary.

Bt1—1 to 8 inches; yellowish brown (10YR 5/4) very cobbly loam, dark brown (10YR 4/3) moist; weak medium and coarse subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine, medium, and coarse roots; common faint clay films on faces of peds; 25 percent cobbles and 20 percent gravel; many mica flakes; slightly acid; clear wavy boundary.

Bt2—8 to 16 inches; yellowish brown (10YR 5/4) very cobbly loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse subangular blocky structure; slightly hard, friable, sticky and plastic; few medium and coarse roots; common distinct clay films on faces of peds; 25 percent cobbles and 20 percent gravel; many mica flakes; slightly acid; clear wavy boundary.

C—16 to 36 inches; yellowish brown (10YR 5/6) extremely cobbly sandy clay loam, dark yellowish brown (10YR 4/6) moist; massive; soft, very friable, slightly sticky and slightly plastic; few medium and coarse roots; 40 percent cobbles and 20 percent gravel; many mica flakes; slightly acid; abrupt wavy boundary.

R—36 inches; hard micaceous schist.

The depth to hard bedrock ranges from 20 to 40 inches. Mica flakes are common throughout the profile. Reaction is moderately acid or slightly acid throughout the profile. Rock fragments throughout the profile are mainly cobbles and gravel. The Bt horizon has a fine-earth texture of loam or clay loam and is 24 to 35 percent clay. It is 35 to 60 percent rock fragments. The C horizon has a fine-earth texture of sandy clay loam or clay loam and is 20 to 32 percent clay. It is 60 to 85 percent rock fragments. Some pedons do not have a C horizon.

Haverdad Series

The Haverdad series consists of very deep, well drained soils on flood plains. These soils formed in alluvium derived from various sources. Slope ranges from 0 to 4 percent. Elevation is 4,800 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Haverdad loam in an area of Haverdad-Clarkelen complex, 0 to 3 percent slopes, 1,820 feet east and 2,530 feet north of the southwest corner of sec. 16, T. 35 N., R. 87 W.

A—0 to 3 inches; light brownish gray (2.5Y 6/2) loam, grayish brown (2.5Y 5/2) moist; weak coarse granular structure; hard, firm, sticky and plastic; many fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C—3 to 60 inches; light brownish gray (2.5Y 6/2) loam stratified with thin layers of silt loam, very fine sandy loam, and sandy loam, grayish brown (2.5Y 5/2) moist; weak thin bedding planes; hard, firm, sticky and plastic; common fine and medium roots to 20 inches; slightly effervescent; disseminated calcium carbonate; moderately alkaline.

The particle-size control section averages 20 to 35 percent clay. The hue is 2.5Y or 10YR throughout the profile. The A horizon has a slightly alkaline or moderately alkaline reaction. The dominant texture in the C horizon is loam or clay loam; but this horizon is stratified with thin layers of sandy loam, very fine sandy loam, sandy clay loam, or silt loam. It has a moderately alkaline or strongly alkaline reaction.

Havermom Series

The Havermom series consists of very deep, moderately well drained soils on flood plains. These soils formed in alluvium derived from various sources. Slope ranges from 0 to 5 percent. Elevation is 6,000 to 7,200 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 38 to 42 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Havermom fine sandy loam, 0 to 5 percent slopes, 1,100 feet west and 650 feet south of the northeast corner of sec. 16, T. 29 N., R. 86 W.

A—0 to 4 inches; light brownish gray (10YR 6/2) fine sandy loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many fine and very fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C—4 to 60 inches; light brownish gray (2.5Y 6/2) loam stratified with thin layers of fine sandy loam, clay loam and silty clay loam, dark grayish brown (2.5Y 4/2) moist, weak thin bedding planes; hard, friable, slightly sticky and plastic; violently effervescent; calcium carbonate is disseminated and also occurs as a few fine soft masses in some layers; very strongly alkaline.

The hue is 10YR or 2.5Y throughout the profile. The particle-size control section averages 18 to 35 percent clay. The A horizon has a moderately alkaline or strongly alkaline reaction. The C horizon is dominantly loam or clay loam, but it is stratified with thin layers of fine sandy loam, sandy clay loam, silt loam, or silty clay loam. Gravelly or very gravelly layers occur below a depth of 40 inches in some pedons. The C horizon commonly has a strongly alkaline or very strongly alkaline reaction. In some pedons, however, reaction in part of this horizon is buffered by gypsum and it is moderately alkaline. Exchangeable sodium in the C horizon is 15 to 25 percent.

Hawkstone Series

The Hawkstone series consists of very deep, well drained soils on hills and alluvial fans. These soils formed in eolian deposits, slopewash alluvium, and residuum derived dominantly from sandstone. Elevation is 6,000 to 6,500 feet. Slope ranges from 2 to 20 percent. The annual precipitation is 10 to 14 inches, the annual temperature is 40 to 42 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Hawkstone loamy sand, 5 to 20 percent slopes, 2,000 feet west and 500 feet south of the northeast corner of sec. 23, T. 32 N., R. 84 W.

A—0 to 5 inches; brown (10YR 5/3) loamy sand, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; neutral; abrupt smooth boundary.

Bw1—5 to 14 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; moderate coarse prismatic structure; hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; neutral; gradual smooth boundary.

Bw2—14 to 30 inches; brownish yellow (10YR 6/6) sandy loam, yellowish brown (10YR 5/6) moist; weak coarse prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; few medium roots; neutral; gradual wavy boundary.

C—30 to 60 inches; brownish yellow (10YR 6/6) sandy loam, yellowish brown (10YR 5/6) moist; massive; soft, very friable, slightly sticky and slightly plastic; neutral.

The A and Bw horizons have a neutral or slightly alkaline reaction. The Bw and C horizons have hue of 10YR or 7.5YR. Texture in the Bw horizon is sandy loam or coarse sandy loam. The texture in the C horizon is commonly sandy loam or coarse sandy loam, but in some pedons it is loamy sand below a depth of 40 inches. The C horizon commonly has a neutral or slightly alkaline reaction. In some pedons, however, below a depth of 40 inches this horizon is effervescent and reaction is moderately alkaline or strongly alkaline.

Hazton Series

The Hazton series consists of shallow, well drained soils on mountain ridges and hills. These soils formed in residuum derived from granite. Slope ranges from 10 to 40 percent. Elevation is 7,600 to 8,200 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 32 to 36 degrees F, and the frost-free period is less than 80 days. Frost is common in the summer months.

Typical pedon of Hazton gravelly sandy loam in an area of Hazton-Rock outcrop complex, 10 to 40 percent slopes, SW1/4 sec. 6, T. 30 N., R. 78 W.

A1—0 to 3 inches; dark grayish brown (10YR 4/2) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; slightly acid; clear wavy boundary.

A2—3 to 11 inches; grayish brown (10YR 5/2) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; slightly hard, very friable, nonsticky and nonplastic; common fine roots; slightly acid; clear wavy boundary.

R—11 inches; hard granite.

Reaction is slightly acid or neutral throughout the profile. The depth to hard granite bedrock ranges from 10 to 20 inches. A C horizon is present in some pedons. The A2 and C horizons have a texture of gravelly sandy loam or gravelly coarse sandy loam. They are 10 to 18 percent clay and are 20 to 35 percent rock fragments. The rock fragments are mainly fine gravel.

Herbman Series

The Herbman series consists of very shallow or shallow, well drained soils on mountains. These soils formed in colluvium and residuum derived from crystalline rocks. Slope ranges from 15 to 40 percent. Elevation is 7,600 to 9,000 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 35 to 41 degrees F, and the frost-free period is less than 80 days. Frost is common in the summer months.

Typical pedon of Herbman very cobbly sandy loam in an area of Cabin-Herbman complex, 6 to 40 percent slopes, 700 feet east and 1,100 feet north of the southwest corner of sec. 23, T. 40 N., R. 87 W.

A—0 to 5 inches; dark grayish brown (10YR 4/2) very cobbly sandy loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium roots; 30 percent cobbles and 10 percent gravel; neutral; clear irregular boundary.

AC—5 to 15 inches; dark brown (10YR 4/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; massive; soft, very friable, nonsticky and nonplastic; common fine roots; 35 percent gravel and 5 percent cobbles; neutral; clear smooth boundary.

Cr—15 inches; soft gneiss.

The depth to soft bedrock ranges from 8 to 20 inches. The particle-size control section is 10 to 18 percent clay and is 35 to 60 percent rock fragments. The rock fragments are mainly gravel and cobbles. Mica flakes are common throughout the profile. Some pedons have C horizons.

Hiland Series

The Hiland series consists of very deep, well drained soils on terraces, alluvial fans, foot slopes, and stable dunes. These soils formed in alluvium derived from sandstone and eolian deposits. Slope ranges from 0 to 15 percent. Elevation is 5,000 to 6,700 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 42 to 49 degrees F, and the frost-free period is 100 to 130 days.

Typical pedon of Hiland sandy loam, 0 to 6 percent slopes, 2,435 feet east and 405 feet north of the southwest corner of sec. 7, T. 36 N., R. 84 W.

A—0 to 2 inches; grayish brown (10YR 5/2) sandy loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots; neutral; abrupt smooth boundary.

Bt1—2 to 7 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and nonplastic; common medium and fine roots; few faint clay films on faces of peds; neutral; clear wavy boundary.

Bt2—7 to 16 inches; light yellowish brown (10YR 6/4) sandy clay loam, yellowish brown (10YR 5/4) moist; strong medium prismatic structure parting to moderate medium angular blocky; hard, firm, sticky and plastic; common medium and fine roots; many prominent clay films on faces of peds; slightly alkaline; clear wavy boundary.

Bt3—16 to 22 inches; light yellowish brown (10YR 6/4) sandy clay loam, yellowish brown (10YR 5/4) moist; moderate coarse prismatic structure parting to weak coarse subangular blocky; hard, friable, slightly sticky and slightly plastic; common fine roots; many distinct clay films on vertical faces of peds; moderately alkaline; clear wavy boundary.

Bk1—22 to 27 inches; light gray (10YR 7/2) sandy loam, light brownish gray (10YR 6/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as common distinct fine and medium soft masses and filaments; strongly alkaline; gradual wavy boundary.

Bk2—27 to 38 inches; very pale brown (10YR 7/3) loamy sand, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; very weakly cemented by calcium carbonate, peds crush into single grains with light pressure; violently effervescent; calcium carbonate is disseminated and also occurs as common prominent fine soft masses; strongly alkaline; gradual wavy boundary.

C—38 to 60 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; strongly effervescent; disseminated calcium carbonate; strongly alkaline.

In some pedons the 2C horizon is absent or a C horizon is present. Reaction is neutral or slightly alkaline in the A horizon, neutral to moderately alkaline in the Bt horizon, and moderately alkaline or strongly alkaline in the Bk and C horizons. The content of gravel in the A and Bt horizons ranges from 0 to 10 percent. The Bt, Bk, and C horizons have hue of 10YR or 2.5Y. The Bt horizon commonly has a texture of sandy clay loam. In some pedons, however, a small part of this horizon is sandy loam. The Bt horizon averages 20 to 30 percent clay.

The fine-earth texture in the Bk horizon is commonly sandy loam, loamy sand, or fine sandy loam, but in some pedons it is sandy clay loam. The C horizon has a fine-earth texture of loamy sand or sandy loam. The Bk and C horizons commonly are 0 to 10 percent rock fragments, but in some pedons below a depth of 30 inches they are 15 to 30 percent rock fragments. Calcium carbonate equivalent is 6 to 15 percent in the Bk horizon and 1 to 10 percent in the C and 2C horizons.

Holderness Series

The Holderness series consists of very deep, well drained soils on plateaus. These soils formed in alluvium derived from sandstone and shale. Slope ranges from 3 to 10 percent. Elevation is 7,000 to 7,600 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 35 to 40 degrees F, and the frost-free period is 80 to 100 days.

Typical pedon of Holderness loam in an area of Peyton-Holderness loams, 3 to 15 percent slopes, NW$^1/_4$NW$^1/_4$ sec. 29, T. 33 N., R. 88 W.

A—0 to 9 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium and coarse granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; neutral; clear smooth boundary.

Bt1—9 to 17 inches; brown (10YR 5/3) clay, dark brown (10YR 4/3) moist; strong moderate prismatic structure parting to strong fine and medium angular blocky; very hard, very firm, very sticky and very plastic; common fine, medium, and coarse roots; many distinct clay films on faces of peds; slightly alkaline; clear smooth boundary.

Bt2—17 to 26 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium angular blocky; very hard, very firm, sticky and plastic; few fine, medium and coarse roots; many faint and few distinct clay films on faces of peds; slightly alkaline; clear wavy boundary.

BC—26 to 38 inches; grayish brown (10YR 5/3) sandy clay loam, dark grayish brown (10YR 4/2) moist; weak medium and coarse angular blocky structure; hard, firm, slightly sticky and slightly plastic; very few medium roots; slightly alkaline; clear wavy boundary.

C—38 to 60 inches; grayish brown (2.5Y 5/2) sandy clay loam, dark grayish brown (2.5Y 4/2) moist; massive; slightly hard, firm, slightly sticky and slightly plastic; slightly alkaline.

The content of rock fragments ranges from 0 to 10 percent throughout the profile. The Bt horizon has a texture of clay loam or clay and is 35 to 45 percent clay. It has a neutral or slightly alkaline reaction. The C horizon has hue of 2.5Y or 10YR. It has a texture of sandy clay loam or clay loam.

Hyshot Series

The Hyshot series consists of moderately deep, well drained soils on hillsides. These soils formed in slopewash alluvium and residuum derived from gypsiferous shale. Slope ranges from 6 to 15 percent. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

Typical pedon of Hyshot clay loam in an area of Brokenhorn-Hyshot clay loams, 3 to 15 percent slopes, 150 feet south and 1,600 feet west of the northeast corner of sec. 3, T. 40 N., R. 82 W.

A—0 to 2 inches; light brownish gray (2.5Y 6/2) clay loam, grayish brown (2.5Y 5/2) moist; moderate thick platy structure parting to moderate medium granular; slightly hard, friable, sticky and plastic; many fine and common medium roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bk—2 to 11 inches; light brownish gray (2.5Y 6/2) clay loam, grayish brown (2.5Y 5/2) moist; weak medium prismatic structure parting to weak medium subangular blocky; hard, firm, sticky and plastic; common fine roots; violently effervescent; common medium soft cylindrical masses of calcium carbonate in root channels; moderately alkaline; gradual wavy boundary.

By—11 to 23 inches; light brownish gray (2.5Y 6/2) clay loam, grayish brown (2.5Y 5/2) moist; weak medium platy shale rock structure; slightly hard, friable, sticky and plastic; few fine roots; violently effervescent; disseminated calcium carbonate; common seams and threads of gypsum; slightly alkaline.

Cr—23 inches; soft platy gypsiferous shale.

The depth to soft shale bedrock ranges from 20 to 40 inches. The hue is 2.5Y or 10YR throughout the profile. The particle-size control section is clay loam or clay. It is 35 to 45 percent clay and is 15 to 35 percent fine sand and coarser sand. The A and Bk horizons have moderately alkaline or strongly alkaline reactions. The calcium carbonate equivalent in the Bk horizon is 15 to 25 percent. The By horizon is 6 to 20 percent gypsum and has a slightly alkaline or moderately alkaline reaction. In some pedons the By horizon has as much as 70 percent soft platy shale fragments.

Inchau Series

The Inchau series consists of moderately deep, well drained soils on mountain dip slopes and hillsides. These soils formed in slopewash alluvium and residuum derived from sandstone. Slope ranges from 6 to 25 percent. Elevation is 6,900 to 8,800 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 33 to 37 degrees F, and the frost-free period is less than 80 days. Frost is common in the summer months.

Typical pedon of Inchau loam in an area of Inchau-Clayburn-Chittum complex, 4 to 20 percent slopes, 600 feet north and 1,930 feet west of the southeast corner of sec. 3, T. 40 N., R. 89 W.

A—0 to 4 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; neutral; clear smooth boundary.

Bt1—4 to 14 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and plastic; common fine and medium roots; few faint clay films on faces of peds; 15 percent angular gravel and channery fragments; neutral; gradual wavy boundary.

Bt2—14 to 21 inches; grayish brown (10YR 5/2) clay loam, dark grayish brown (10YR 4/2) moist; strong medium subangular blocky structure; hard, friable, sticky and plastic; few medium roots; many distinct clay films on faces of peds; 15 percent angular gravel and channery fragments; neutral; clear wavy boundary.

C—21 to 30 inches; dark yellowish brown (10YR 4/4) loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few medium roots; 15 percent angular gravel and channery fragments; neutral; clear wavy boundary.

Cr—30 inches; soft sandstone.

The depth to soft bedrock ranges from 20 to 40 inches. Rock fragments are mainly angular sandstone gravel and channery fragments throughout the profile. The Bt and C horizons have a fine-earth texture of loam or clay loam. The Bt horizon is 20 to 35 percent clay and the C horizon is 18 to 30 percent clay. They are 5 to 25 percent rock fragments.

Irson Series

The Irson series consists of very shallow or shallow, well drained soils on mountain crests and mountain slopes. These soils formed in colluvium and residuum derived from granite or conglomerate. Slope ranges from 5 to 65 percent. Elevation is 7,000 to 9,000 feet. The annual precipitation is 15 to 35 inches, the annual temperature is 32 to 36 degrees F, and the frost-free period is less than 90 days. Frost is common in the summer months.

Typical pedon of Irson very gravelly sandy clay loam in an area of Kezar-Irson-Clayburn association, hilly, 600 feet east and 2,300 feet north of the southwest corner of sec. 17, T. 40 N., R. 87 W.

A—0 to 7 inches; dark brown (10YR 4/3) very gravelly sandy clay loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; 30 percent angular granite gravel and 15 percent angular granite cobbles; neutral; clear smooth boundary.

C—7 to 11 inches; dark yellowish brown (10YR 4/4) very cobbly sandy clay loam, dark yellowish brown (10YR 3/4) moist; massive; soft, friable, slightly sticky and slightly plastic; common fine and medium roots; 20 percent angular granite gravel and 40 percent angular granite cobbles; neutral; abrupt smooth boundary.

R—11 inches; hard, fractured granite.

The depth to hard bedrock ranges from 8 to 20 inches. The particle-size control section is 18 to 27 percent clay and is 35 to 50 percent fine sand and coarser sand. The content of rock fragments throughout the profile ranges from 35 to 75 percent. The rock fragments consist of 15 to 50 percent angular gravel or channery fragments less than 3 inches in diameter, 10 to 40 percent angular cobbles or channery fragments 3 to 10 inches in diameter, and 0 to 15 percent stones.

The Irson soils in map unit 106 are a taxadjunct to the Irson series because the surface horizons are too light colored or too thin to be a mollic epipedon. This difference, however, does not significantly affect the use or behavior of the soils.

Kather Series

The Kather series consists of moderately deep, well drained soils on dip slopes. These soils formed in slopewash alluvium and residuum derived from shale. Slope ranges from 6 to 15 percent. Elevation is 5,600 to 7,100 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 39 to 43 degrees F, and the frost-free period is 100 to 110 days.

Typical pedon of Kather clay loam in an area of Middlewood-Kather clay loams, 6 to 30 percent slopes, 1,480 feet east and 1,670 feet south on the northwest corner of sec. 27, T. 38 N., R. 86 W.

A—0 to 3 inches; pale brown (10YR 6/3) clay loam, dark brown (10YR 4/3) moist; moderate fine granular structure; soft, friable, sticky and plastic; common fine and medium, and few coarse roots; neutral; clear smooth boundary.

Bt1—3 to 10 inches; brown (10YR 5/3) clay, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate fine angular blocky; hard, firm, sticky and plastic; few medium and coarse roots; many faint clay films on faces of peds; neutral; clear smooth boundary.

Bt2—10 to 16 inches; grayish brown (10YR 5/2) clay, dark grayish brown (10YR 4/2) moist; moderate fine prismatic structure parting to moderate fine and medium angular blocky; hard, firm, sticky and plastic; few coarse roots; many faint and few distinct clay films on faces of peds; neutral; clear smooth boundary.

Bt3—16 to 24 inches; light brownish gray (10YR 6/2) clay, dark grayish brown (10YR 4/2) moist; moderate medium angular blocky structure; hard, firm, sticky and plastic; many faint clay films on faces of peds; neutral.

Cr—24 inches; soft platy shale.

The depth to soft bedrock ranges from 20 to 40 inches. The Bt horizon has a texture of clay or clay loam. It is 35 to 50 percent clay and is 0 to 15 percent rock fragments. The rock fragments are mainly channery fragments.

Keeline Series

The Keeline series consists of very deep, somewhat excessively drained soils on hillsides and foot slopes. These soils formed in slopewash alluvium and residuum derived from sandstone. Slope ranges from 6 to 20 percent. Elevation is 5,400 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Keeline fine sandy loam in an area of Keeline-Taluce-Rock outcrop complex, 6 to 20 percent slopes, 2,150 feet north and 170 feet west of the southeast corner of sec. 36, T. 39 N., R. 79 W.

A—0 to 3 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; slightly effervescent; disseminated calcium carbonate; slightly alkaline; clear smooth boundary.

Bw—3 to 8 inches; yellowish brown (10YR 5/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C—8 to 60 inches; light yellowish brown (10YR 6/4) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

The texture throughout the profile is fine sandy loam or sandy loam. The particle-size control section is 8 to 18 percent clay. The hue is 10YR or 2.5Y throughout the profile. Reaction is neutral or slightly alkaline in the A horizon, slightly alkaline or moderately alkaline in the Bw horizon, and moderately alkaline or strongly alkaline in the C horizon. Some pedons do not have a Bw horizon. In some pedons the C horizon has a discontinuous layer with an accumulation of calcium carbonate.

Keyner Series

The Keyner series consists of very deep, well drained soils on terraces, alluvial fans and hillslopes. These soils formed in alluvium from various sources. Slope ranges from 0 to 12 percent. Elevation is 5,000 to 6,300 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Keyner sandy loam in an area of Keyner-Absted-Slickspots complex, 0 to 6 percent slopes, 2,540 feet north of the southeast corner of sec. 4, T. 37 N., R. 79 W.

A—0 to 1 inch; light brownish gray (2.5Y 6/2) sandy loam, dark grayish brown (2.5Y 4/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common fine roots; slightly alkaline; abrupt smooth boundary.

Bt—1 to 12 inches; grayish brown (2.5Y 5/2) sandy clay loam, dark grayish brown (2.5Y 4/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, slightly sticky and slightly plastic; common fine roots; many distinct clay bridges on faces of peds; moderately alkaline; clear smooth boundary.

Btkn—12 to 19 inches; light yellowish brown (2.5Y 6/4) sandy clay loam, olive brown (2.5Y 4/4) moist; strong medium prismatic structure parting to moderate medium angular blocky; very hard, very firm, sticky and slightly plastic; few fine roots; common distinct clay bridges on faces of peds; strongly effervescent; disseminated calcium carbonate; very strongly alkaline; gradual smooth boundary.

Bk—19 to 31 inches; light brownish gray (2.5Y 6/2) sandy clay loam, grayish brown (2.5Y 5/2) moist; moderate medium prismatic structure; hard, firm, slightly sticky and slightly plastic; violently effervescent; calcium carbonate is disseminated and also occurs as coatings on faces of peds; very strongly alkaline; gradual smooth boundary.

C—31 to 60 inches; light yellowish brown (2.5Y 6/4) sandy clay loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; strongly effervescent; disseminated calcium carbonate; strongly alkaline.

The content of rock fragments throughout the profile ranges from 0 to 10 percent. The rock fragments are mainly gravel. The hue is 2.5Y or 10YR throughout the profile.

Reaction is slightly alkaline or moderately alkaline in the A horizon and moderately alkaline or strongly alkaline in the Bt horizon. The Bt and Btkn horizons have a texture of loam, sandy clay loam, or clay loam. They are 20 to 35 percent clay and are 35 to 50 percent fine sand and coarser sand. Exchangeable sodium is less than 15 percent in the Bt horizon and more than 15 percent in the Btkn horizon.

The C horizon commonly has a texture of loam or sandy clay loam. In some pedons, however, it is sandy loam or fine sandy loam. This horizon has a strongly alkaline or very strongly alkaline reaction and 15 to 40 percent exchangeable sodium. Some pedons have a Bkn or Bkny horizon and do not have a C horizon. These horizons have the same range in characteristics as the C horizon except they have an accumulation of calcium carbonate, sodium, or gypsum.

Kezar Series

The Kezar series consists of moderately deep, well drained soils on mountain slopes. These soils formed in slopewash alluvium and residuum derived from granite. Slope ranges from 6 to 35 percent. Elevation is 7,200 to 8,900 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 32 to 36 degrees F, and the frost-free period is less than 90 days. Frost is common in the summer months.

Typical pedon of Kezar gravelly sandy loam in an area of Irson-Kezar-Rock outcrop complex, 6 to 40 percent slopes, SE¼ sec. 9, T. 33 N., R. 88 W.

A—0 to 4 inches; dark brown (10YR 4/3) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; 20 percent fine gravel; neutral; clear smooth boundary.

Bt1—4 to 8 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to weak medium angular blocky; slightly hard, friable, sticky and plastic; common medium and few coarse roots; common faint clay films on faces of peds; 15 percent fine gravel; neutral; clear smooth boundary.

Bt2—8 to 16 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 3/4) moist; moderate medium prismatic structure parting to moderate fine and medium angular blocky; hard, firm, sticky and plastic; few medium and coarse roots; many distinct clay films on faces of peds; 15 percent fine gravel; neutral; clear smooth boundary.

Bt3—16 to 21 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to weak medium angular blocky; hard, firm, sticky and plastic; few coarse roots; common faint clay films on faces of peds; 15 percent fine gravel; neutral; clear smooth boundary.

C—21 to 27 inches; brown (10YR 5/3) gravelly sandy clay loam, dark brown (10YR 4/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few coarse roots; 20 percent fine gravel; slightly alkaline; clear smooth boundary.

R—27 inches; hard granite.

The depth to hard bedrock ranges from 20 to 40 inches. Rock fragments throughout the profile are mainly angular granite gravel and a few cobbles and stones. The A horizon is 5 to 25 percent rock fragments. The Bt horizon is 20 to 35 percent clay and is 10 to 25 percent rock fragments. The C horizon has hue of 10YR or 2.5Y. It is 15 to 35 percent rock fragments. Reaction in the C horizon is neutral or slightly alkaline.

Kishona Series

The Kishona series consists of very deep, well drained soils on foot slopes and alluvial fans. These soils formed in slopewash alluvium derived from sandstone, siltstone, and shale. Slope ranges from 6 to 20 percent. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Kishona loam in an area of Sunup-Kishona-Rock outcrop complex, 10 to 30 percent slopes, NW¼SW¼ sec. 2, T. 34 N., R. 84 W.

A—0 to 3 inches; light brownish gray (2.5Y 6/2) loam, dark grayish brown (2.5Y 4/2) moist; weak medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

AC—3 to 9 inches; light brownish gray (2.5Y 6/2) loam, grayish brown (2.5Y 5/2) moist; massive; slightly hard, friable, slightly sticky and plastic; common medium and few fine and coarse roots; violently effervescent; disseminated calcium carbonate; strongly alkaline; clear smooth boundary.

C1—9 to 42 inches; pale olive (5Y 6/3) loam, olive (5Y 5/3) moist; massive; slightly hard, friable, sticky and plastic; violently effervescent; calcium carbonate is disseminated and also occurs as few fine soft masses; strongly alkaline; clear smooth boundary.

C2—42 to 60 inches; pale olive (5Y 6/3) loam, olive (5Y 5/3) moist; massive; soft, friable, slightly sticky and slightly plastic; few coarse roots; violently effervescent; calcium carbonate is disseminated and also occurs as few medium seams; moderately alkaline.

The content of rock fragments ranges from 0 to 15 percent throughout the profile. The rock fragments are mainly gravel. The hue is 2.5Y or 10YR in the A horizon and 5Y to 10YR in the C horizon. The A horizon has a slightly alkaline or moderately alkaline reaction.

The C horizon has a texture of loam or clay loam. It is 20 to 35 percent clay and is 15 to 35 percent fine sand and coarser sand. This horizon has a moderately alkaline or strongly alkaline reaction. Discontinuous layers with an accumulation of calcium carbonate are common in this horizon.

Lander Series

The Lander series consists of very deep, somewhat poorly drained soils on flood plains. These soils formed in alluvium derived from various sources. Slope ranges from 0 to 3 percent. Elevation is 5,400 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 41 to 45 degrees F, and the frost-free period is 100 to 110 days.

Typical pedon of Lander loam, 0 to 3 percent slopes, 450 feet east and 110 feet south of northwest corner of sec. 23, T. 33 N., R. 79 W.

A1—0 to 6 inches; dark brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; moderate fine and medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

A2—6 to 12 inches; dark brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; weak medium prismatic structure parting to weak fine and medium subangular blocky; soft, very friable, slightly sticky and slightly plastic; common fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear irregular boundary.

C1—12 to 18 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 4/3) moist; massive; soft, very friable, sticky and slightly plastic; few fine roots; strongly effervescent; disseminated calcium carbonate; 10 percent gravel; moderately alkaline; gradual wavy boundary.

C2—18 to 36 inches; yellowish brown (10YR 5/4) sandy clay loam, dark brown (10YR 4/3) moist; common fine prominent yellowish red (5YR 4/6) mottles; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; strongly effervescent; disseminated calcium carbonate; few very fine threads of gypsum; moderately alkaline; gradual wavy boundary.

C3—36 to 60 inches; yellowish brown (10YR 5/4) gravelly sandy clay loam, dark brown (10YR 4/3) moist; common fine prominent yellowish red (5YR 4/6) mottles; massive; slightly hard, friable, slightly sticky and slightly plastic; violently effervescent; disseminated calcium carbonate; 20 percent gravel; moderately alkaline.

The seasonal high depth of the water table is 1.5 to 3.5 feet from April through June. The particle-size control section has a fine-earth texture of sandy clay loam, clay loam, or loam and is 20 to 35 percent clay. The C1 and C2 horizons are 0 to 15 percent gravel and cobbles. The C3 horizon is 15 to 35 percent gravel and cobbles.

Leavitt Series

The Leavitt series consists of very deep, well drained soils on mountain hillslopes and alluvial fans. These soils formed in slopewash alluvium derived dominantly from tuffaceous mudstone. Slope ranges from 5 to 40 percent. Elevation is 7,000 to 8,000 feet. The annual precipitation is 15 to 17 inches, the annual air temperature is 33 to 37 degrees F, and the frost-free period is less than 90 days. Frost is common in the summer months.

Typical pedon of Leavitt loam in an area of Leavitt-Coutis complex, 5 to 40 percent slopes, 1,450 feet east and 1,375 feet north of the southwest corner of sec. 31, T. 33 N., R. 87 W.

A—0 to 3 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; neutral; abrupt smooth boundary.

Bt1—3 to 10 inches; dark brown (10YR 4/3) clay loam, dark brown (10YR 3/3) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; common distinct clay films on faces of peds; neutral; clear wavy boundary.

Bt2—10 to 18 inches; dark yellowish brown (10YR 4/4) clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common fine and medium, and few coarse roots; many distinct clay films on faces of peds; neutral; clear wavy boundary.

Bt3—18 to 38 inches; pale brown (10YR 6/3) clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few fine, medium, and coarse roots; few distinct clay films on faces of peds; neutral; clear wavy boundary.

Bk—38 to 60 inches; very pale brown (10YR 7/4) loam, light yellowish brown (10YR 6/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

The A and Bk horizons have hue of 10YR or 7.5YR and the Bt horizon has hue of 10YR to 5YR. Reactions in the A and Bt horizons are neutral or slightly alkaline. The Bt horizon has a texture of loam or clay loam. This horizon is 20 to 35 percent clay and is 15 to 35 percent fine sand and coarser sand. The Bk horizon has a calcium carbonate equivalent of 5 to 15 percent and a moderately alkaline or strongly alkaline reaction.

Lolite Series

The Lolite series consists of very shallow or shallow, well drained soils on ridges and hills. These soils formed in residuum derived from sodic shale. Slope ranges from 5 to 50 percent. Elevation is 5,300 to 6,500 feet. The annual precipitation is 7 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Lolite clay in an area of Lolite-Rock outcrop complex, 10 to 40 percent slopes, 720 feet south and 2,350 feet east of the northwest corner of sec. 4, T. 36 N., R. 85 W.

A—0 to 2 inches; light brownish gray (2.5Y 6/2) clay, dark grayish brown (2.5Y 4/2) moist; weak fine granular structure; slightly hard, friable, sticky and plastic; common fine roots; slightly alkaline; clear wavy boundary.

By—2 to 6 inches; light brownish gray (2.5Y 6/2) clay, dark grayish brown (2.5Y 4/2) moist; weak medium subangular blocky structure; hard, firm, sticky and plastic; common fine roots; common fine filaments and clusters of gypsum crystals; slightly alkaline; clear wavy boundary.

C—6 to 10 inches; gray (5Y 5/1) clay, dark gray (5Y 4/1) moist; thin platy shale rock structure; hard, firm, sticky and plastic; few fine roots; few fine clusters of sodium sulfate crystals inherited from the parent material; exchangeable sodium is 35 percent; moderately alkaline; clear smooth boundary.

Cr—10 inches; soft platy sodic shale.

The depth to bedrock ranges from 6 to 20 inches. The particle-size control section is clay, silty clay, or clay loam. It is 35 to 55 percent clay and is less than 35 percent fine sand and coarser sand. The hue is 2.5Y or 5Y throughout the profile. Reaction throughout the profile is slightly alkaline or moderately alkaline. These soils commonly are noneffervescent throughout the profile. In some pedons, however, the A horizon is effervescent due to additions from dust and surface water overflow. A vesicular crust occurs on the surface of some pedons.

The By horizon has 2 to 5 percent gypsum. Some pedons do not have a By horizon. The C horizon has platy shale rock structure but roots can penetrate it. The salt crystals in this horizon are dominantly sodium sulfate and are inherited from the parent material with only slight alteration. Exchangeable sodium in the C horizon ranges from 15 to 60 percent, but it is commonly more than 20 percent. Electrical conductivity of this horizon ranges from 8 to 20 millimhos per centimeter.

Lonebear Series

The Lonebear series consists of very deep, well drained soils on hillsides. These soils formed in slopewash alluvium and residuum derived from gypsiferous shale. Slope ranges from 3 to 12 percent. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

Typical pedon of Lonebear clay loam, 3 to 12 percent slopes, 700 feet south and 700 feet west of the northeast corner of sec. 8, T. 40 N., R. 82 W.

A—0 to 1 inch; grayish brown (2.5Y 5/2) clay loam, dark grayish brown (2.5Y 4/2) moist; moderate fine granular structure; slightly hard, friable, sticky and plastic; common fine and medium roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bw—1 to 12 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; very hard, firm, sticky and plastic; common fine and medium roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

By—12 to 26 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; massive; very hard, firm, sticky and plastic; few fine roots; slightly effervescent; disseminated calcium carbonate; 23 percent gypsum, common fine threads and seams of gypsum; slightly alkaline; gradual wavy boundary.

C1—26 to 45 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; massive, weak platy shale rock structure visible but soil fragments do not separate into platelets; hard, firm, sticky and plastic; few fine roots; matrix noneffervescent; few fine and medium pockets of slightly effervescent material; few fine clusters of gypsum crystals; slightly alkaline; gradual wavy boundary.

C2—45 to 60 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; moderate thin platy shale rock structure; hard, firm, sticky and plastic; matrix noneffervescent; few fine and medium pockets of slightly effervescent material; few fine clusters of gypsum crystals; 50 percent soft shale fragments that break down when moistened and rubbed; slightly alkaline.

The particle-size control section is clay, silty clay, or clay loam. It is 35 to 50 percent clay and is less than 35 percent fine sand and coarser sand. The hue is 10YR or 2.5Y throughout the profile. The By horizon is 10 to 30 percent gypsum. Reaction in the By and C horizons is slightly alkaline or moderately alkaline. Electrical conductivity in the C horizon ranges from 2 to 8 millimhos per centimeter.

Lupinto Series

The Lupinto series consists of very deep or deep, well drained soils on alluvial fans, terraces, ridges, hills, and foot slopes of terrace breaks. These soils formed in alluvium derived from various sources. Slope ranges from 6 to 30 percent. Elevation is 5,800 to 7,600 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Lupinto gravelly loam in an area of Brownsto-Lupinto complex, 6 to 40 percent slopes, 680 feet north and 2,050 feet west of the southeast corner of sec. 35, T. 35 N., R. 87 W.

A—0 to 3 inches; yellowish brown (10YR 5/4) gravelly loam, dark yellowish brown (10YR 4/4) moist; weak medium granular structure; slightly hard, very friable, slightly sticky and slightly plastic; many fine and medium roots; 20 percent gravel; slightly alkaline; clear smooth boundary.

Bt—3 to 8 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to weak medium angular blocky; hard, firm, sticky and plastic; common fine and medium roots; few faint clay films on faces of peds; 20 percent gravel; slightly alkaline; gradual smooth boundary.

Bk1—8 to 41 inches; pale yellow (2.5Y 7/4) very gravelly loam, light yellowish brown (2.5Y 6/4) moist; massive; slightly hard, firm, sticky and plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as few very coarse soft masses and thin coatings on rock fragments; 40 percent gravel and 10 percent cobbles; moderately alkaline; gradual wavy boundary.

Bk2—41 to 60 inches; very pale brown (10YR 7/3) very gravelly sandy loam, brownish yellow (10YR 6/6) moist; massive; soft, friable, slightly sticky and slightly plastic; violently effervescent; calcium carbonate is disseminated and also occurs as few coarse soft masses; 50 percent gravel and 10 percent cobbles; moderately alkaline.

The particle-size control section averages 18 to 30 percent clay and is 35 to 60 percent rock fragments. The rock fragments are mainly gravel and 0 to 15 percent cobbles. The depth to soft bedrock is commonly more than 60 inches, but in some pedons it is 40 to 60 inches. A C horizon is present in some pedons.

The hue is 10YR or 7.5YR in the A and Bt horizons and 7.5YR to 2.5Y in the Bk and C horizons. Reactions in the A and Bt horizons are slightly alkaline or moderately alkaline. Reactions in the Bk and C horizons are moderately alkaline or strongly alkaline.

The Bt horizon has a texture of gravelly clay loam or gravelly sandy clay loam. The Bk1 horizon has a texture of very gravelly loam or very gravelly sandy clay loam and is 18 to 25 percent clay. The Bk2 and C horizons have a texture of very gravelly sandy loam, very gravelly sandy clay loam, or very gravelly loam. Calcium carbonate equivalent in the Bk horizons ranges from 15 to 35 percent.

Lupinto Family

The Lupinto Family soils are very deep, well drained, and are on ridges and hillsides. These soils formed in colluvium and residuum from various sources. Slope ranges from 20 to 45 percent. Elevation is 6,200 to 7,600 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 37 to 43 degrees F, and the frost-free period is 80 to 110 days.

A reference pedon of Lupinto Family, steep, 1,560 feet south and 1,450 feet west of the northeast corner of sec. 31, T. 29 N., R. 77 W.

A—0 to 2 inches; grayish brown (10YR 5/2) gravelly loam, dark grayish brown (10YR 4/2) moist; moderate fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; 20 percent gravel and 5 percent cobbles; neutral; clear wavy boundary.

Bt—2 to 6 inches; brown (10YR 5/3) gravelly clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common fine roots; common faint clay films on faces of peds; 20 percent gravel and 5 percent cobbles; slightly alkaline; clear wavy boundary.

Bk—6 to 22 inches; grayish brown (10YR 5/2) very gravelly loam, dark grayish brown (10YR 4/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; violently effervescent; calcium carbonate is disseminated and also occurs as common medium soft masses and coatings on undersides of rock fragments; 40 percent gravel and 10 percent cobbles; strongly alkaline; clear wavy boundary.

C—22 to 60 inches; light brownish gray (10YR 6/2) very gravelly loam, grayish brown (10YR 5/2) moist; massive; soft, very friable, slightly sticky and slightly plastic; violently effervescent; calcium carbonate is disseminated and also occurs as coatings on rock fragments; 40 percent gravel and 10 percent cobble; strongly alkaline.

The particle-size control section averages 8 to 25 percent clay and is 35 to 60 percent rock fragments. The rock fragments are mainly gravel and cobbles and a few stones. Hue throughout the profile is commonly 10YR, but ranges from 2.5Y to 7.5YR.

Reactions in the A and Bt horizons are neutral or slightly alkaline. The A horizon has a fine-earth texture of loam or sandy loam. The Bt horizon has a fine-earth texture of clay loam, loam, sandy clay loam, or sandy loam. These horizons are 15 to 60 percent rock fragments.

The Bk horizon has a fine-earth texture of loam or sandy loam. It is 35 to 70 percent rock fragments. This horizon has a moderately alkaline or strongly alkaline reaction. The C horizon has a fine-earth texture of loam, sandy clay loam, sandy loam, loamy sand, or sand. It is 45 to 75 percent rock fragments. In about half of the pedons, this horizon is effervescent and reaction is moderately alkaline or strongly alkaline. In the other pedons, the Bk horizon is absent and the C horizon is noneffervescent and has a neutral or slightly alkaline reaction.

McFadden Series

The McFadden series consists of very deep, well drained soils on hillslopes and alluvial fans. These soils formed in alluvium derived dominantly from sandstone. Slope ranges from 2 to 40 percent. Elevation is 5,800 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of McFadden fine sandy loam in an area of McFadden-Edlin-Blackhall complex, 5 to 40 percent slopes, 1,430 feet south and 1,010 feet east of the northwest corner of sec. 33, T. 32 N., R. 87 W.

A—0 to 4 inches; brown (10YR 5/3) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; moderately alkaline; clear wavy boundary.

Bw—4 to 18 inches; brown (10YR 5/3) fine sandy loam, dark grayish brown (10YR 4/2) moist; massive; soft, very friable, nonsticky and nonplastic; common fine and medium roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Bk—18 to 60 inches; pale brown (10YR 6/3) fine sandy loam, brown (10YR 5/3) moist; massive; soft, very friable, nonsticky and nonplastic; violently effervescent; disseminated calcium carbonate; moderately alkaline.

The A horizon has a slightly alkaline or moderately alkaline reaction. The Bw and Bk horizons have a texture of sandy loam or fine sandy loam. The Bk horizon is 8 to 18 percent clay. In some pedons a small part of the Bk horizon has as much as 35 percent rock fragments. The rock fragments are mainly gravel. The Bk horizon has a moderately alkaline or strongly alkaline reaction. Calcium carbonate equivalent in this horizon ranges from 15 to 30 percent.

Middlewood Series

The Middlewood series consists of shallow, well drained soils on dip slopes. These soils formed in slopewash alluvium and residuum derived from shale. Slope ranges from 6 to 30 percent. Elevation is 5,600 to 7,100 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 39 to 43 degrees F, and the frost-free period is 100 to 110 days.

Typical pedon of Middlewood clay loam in an area of Middlewood-Kather clay loams, 6 to 30 percent slopes, 1,100 feet south and 200 feet west of the northeast corner of sec. 3, T. 39 N., R. 83 W.

A—0 to 5 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; common fine roots; neutral; clear smooth boundary.

Bt—5 to 18 inches; brown (10YR 5/3) clay, dark brown (10YR 4/3) moist; weak coarse prismatic structure parting to moderate fine angular blocky; hard, firm, very sticky and very plastic; few fine and medium roots; many prominent clay films on faces of peds; neutral; abrupt smooth boundary.

R—18 inches; hard platy shale.

The depth to hard bedrock ranges from 10 to 20 inches. The Bt horizon has a texture of clay or clay loam and is 35 to 50 percent clay. It is 0 to 10 percent rock fragments. The rock fragments are mainly shale channery fragments.

Milren Series

The Milren series consists of very deep, well drained soils on terraces. These soils formed in alluvium derived from various sources. Slope ranges from 1 to 8 percent. Elevation is 6,800 to 7,400 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 37 to 41 degrees F, and the frost-free period is 90 to 100 days.

Typical pedon of Milren sandy loam in an area of Milren-Bosler-Rock River sandy loams, 1 to 12 percent slopes, 180 feet west and 330 feet south of the northeast corner of sec. 7, T. 32 N., R. 89 W.

A—0 to 3 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; 10 percent gravel; neutral; abrupt smooth boundary.

Bt—3 to 14 inches; yellowish brown (10YR 5/4) sandy clay, dark yellowish brown (10YR 4/4) moist; strong medium prismatic structure parting to strong medium angular blocky; very hard, firm, very sticky and very plastic; common fine and few medium roots; many prominent clay films on faces of peds; moderately alkaline; gradual wavy boundary.

Btk—14 to 19 inches; pale brown (10YR 6/3) sandy clay loam, brown (10YR 5/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, sticky and plastic; common fine and few medium roots; many distinct clay bridges and few faint clay films on faces of peds; strongly effervescent; calcium carbonate is disseminated and also occurs as few coarse soft masses; moderately alkaline; clear wavy boundary.

Bk—19 to 27 inches; very pale brown (10YR 7/3) loam, pale brown (10YR 6/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as many coarse soft masses; strongly alkaline; gradual wavy boundary.

C—27 to 60 inches; very pale brown (10YR 7/4) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, nonsticky and nonplastic; strongly effervescent; disseminated calcium carbonate; strongly alkaline.

The A, Bk and C horizons have hue of 2.5Y or 10YR. The Bt horizon has hue of 10YR or 7.5YR. The content of gravel is 0 to 15 percent throughout the profile. Reactions are neutral or slightly alkaline in the A horizon and slightly alkaline or moderately alkaline in the Bt horizon. The Bk and C horizons have moderately alkaline or strongly alkaline reactions. The Bt horizon has a texture of sandy clay or clay and is 35 to 50 percent clay. The C horizon has a texture of fine sandy loam or loam.

Moslander Series

The Moslander series consists of very deep, poorly drained soils in mountain valley drainageways. These soils formed in alluvium derived from various sources. Slope ranges from 0 to 3 percent. Elevation is 7,000 to 8,500. The annual precipitation is 15 to 19 inches, the annual temperature is 32 to 37 degrees F, and the frost-free period is less than 80 days. Frost is common in the summer months.

Typical pedon of Moslander loam in an area of Clayburn-Moslander association, gently sloping, 1,850 feet east and 1,450 feet south of the northwest corner of sec. 23, T. 39 N., R. 87 W.

Oi—1 inch to 0; dense, fibrous mat of roots.

A—0 to 8 inches; dark gray (10YR 4/1) loam, very dark gray (10YR 3/1) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium roots; slightly effervescent; disseminated calcium carbonate; slightly alkaline; clear wavy boundary.

Bg—8 to 16 inches; gray (10YR 5/1) clay loam, very dark gray (10YR 3/1) moist; common fine prominent yellowish red (5YR 5/6), moist, mottles; moderate medium and coarse subangular blocky structure parting to moderate medium granular; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

BCg—16 to 26 inches; gray (10YR 5/1) clay loam, dark gray (10YR 4/1) moist; common fine prominent yellowish red (5YR 5/6), moist, mottles; very weak fine subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common medium roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

Cg1—26 to 32 inches; gray (10YR 5/1) clay loam, dark gray (10YR 4/1) moist; common fine prominent yellowish red (5YR 5/6), moist, mottles; massive; very hard, firm, slightly sticky and slightly plastic; few medium roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

Cg2—32 to 60 inches; gray (10YR 5/1) clay loam, dark gray (10YR 4/1) moist; many medium prominent yellowish red (5YR 5/6), moist, mottles; massive; very hard, firm, slightly sticky and slightly plastic; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

The seasonal high depth of the water table is 0 to 1.5 feet from April through July. The water table is above a depth of 30 inches the remainder of the year. The particle-size control section averages 25 to 32 percent clay and is 0 to 15 percent rock fragments. The rock fragments are mainly stones and a few gravel and cobbles. The A horizon has a slightly alkaline or moderately alkaline reaction. The Bg and Cg horizons have a texture of clay loam or loam. They have a moderately alkaline or strongly alkaline reaction.

Moyerson Series

The Moyerson series consists of shallow, well drained soils on hills and ridges. These soils formed in slopewash alluvium and residuum derived from shale. Slope ranges from 10 to 30 percent. Elevation is 5,400 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 100 to 110 days.

Typical pedon of Moyerson clay loam in an area of Neldore-Moyerson-Rock outcrop complex, 10 to 30 percent slopes, 1,550 feet north and 1,640 feet west of the southeast corner of sec. 20, T. 38 N., R. 85 W.

A—0 to 2 inches; brown (10YR 5/3) clay loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, friable, sticky and plastic; common fine and very fine roots; 10 percent shale channery fragments; slightly alkaline; clear wavy boundary.

AC—2 to 7 inches; grayish brown (10YR 5/2) clay loam, dark grayish brown (10YR 4/2) moist; weak medium angular blocky structure; very hard, firm, sticky and plastic; common fine and very fine roots; slightly effervescent; disseminated calcium carbonate; 25 percent soft shale fragments; moderately alkaline; clear wavy boundary.

C—7 to 13 inches; grayish brown (10YR 5/2) clay loam, dark grayish brown (10YR 4/2) moist; massive; hard, firm, sticky and plastic; few fine and very fine roots;

strongly effervescent; disseminated calcium carbonate; 30 percent soft shale fragments; strongly alkaline; clear smooth boundary.

Cr—13 inches; soft shale.

The depth to soft bedrock ranges from 10 to 20 inches. The content of soft shale fragments ranges from 0 to 35 percent and the content of shale channery fragments ranges from 0 to 15 percent throughout the profile. The A horizon has a slightly alkaline or moderately alkaline reaction. The C horizon has hue of 10YR or 2.5Y and a texture of clay loam or clay. Reaction in this horizon is moderately alkaline or strongly alkaline.

Mudray Series

The Mudray series consists of shallow, well drained soils on hills and ridges. These soils formed in slopewash alluvium and residuum derived from sodic shale. Slope ranges from 6 to 15 percent. Elevation is 5,600 to 6,100 feet. The annual precipitation is 7 to 9 inches, the annual temperature is 44 to 47 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Mudray silty clay loam in an area of Mudray-Bributte-Birdsley complex, 6 to 30 percent slopes, SW1/4NE1/4 sec. 28, T. 37 N., R. 87 W.

A—0 to 2 inches; very pale brown (10YR 7/3) silty clay loam, brown (10YR 4/3) moist; weak medium granular structure; hard, very firm, sticky and plastic; very few medium and few coarse roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

Btn—2 to 6 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; moderate medium columnar structure parting to moderate fine and medium angular blocky; extremely hard, very firm, sticky and plastic; very few coarse roots; common faint and few distinct clay films on faces of peds; slightly effervescent; disseminated calcium carbonate; very strongly alkaline; clear smooth boundary.

Btkn—6 to 12 inches; pale brown (10YR 6/3) silty clay, brown (10YR 5/3) moist; weak medium prismatic structure parting to moderate fine and medium angular blocky; extremely hard, very firm, sticky and plastic; few clay films on faces of peds; violently effervescent; calcium carbonate is disseminated and also occurs as common coarse soft masses; 5 percent soft shale fragments; very strongly alkaline; gradual wavy boundary.

Bkn—12 to 18 inches; light brownish gray (10YR 6/2) silty clay loam, brown (10YR 5/3) moist; massive; hard, firm, sticky and plastic; violently effervescent; calcium carbonate is disseminated and also occurs as common coarse soft masses; 15 percent soft shale fragments; very strongly alkaline.

Cr—18 inches; soft sodic shale.

The depth to soft shale ranges from 10 to 20 inches. Hue throughout the profile is 10YR or 2.5Y. The content of soft shale fragments ranges from 0 to 15 percent throughout the profile. The A horizon has a moderately alkaline or strongly alkaline reaction. The Btn and Btkn horizons have a texture of silty clay or clay and are 40 to 50 percent clay. The Bkn horizon has a texture of silty clay or silty clay loam. These horizons are 15 to 30 percent exchangeable sodium.

Nathrop Series

The Nathrop series consists of moderately deep, well drained soils on mountain hillsides and dip slopes. These soils formed in colluvium and residuum derived from limestone and sandstone. Slope ranges from 4 to 25 percent. Elevation is 7,500 to 9,000 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 33 to 36 degrees F, and the frost-free period is less than 80 days. Frost is common in the summer months.

Typical pedon of Nathrop very stony loam in an area of Nathrop-Starley complex, 8 to 35 percent slopes, 1,880 feet south and 2,260 feet west of the northeast corner of sec. 32, T. 41 N., R. 85 W.

A—0 to 4 inches; dark brown (10YR 4/3) very stony loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many medium and fine roots; 40 percent rock fragments, mainly angular stones; neutral; clear wavy boundary.

Bt1—4 to 12 inches; dark brown (10YR 4/3) very stony clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium and fine subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; few faint clay films on faces of peds and rock fragments; 45 percent rock fragments, mainly angular stones; neutral; clear wavy boundary.

Bt2—12 to 18 inches; brown (10YR 5/3) extremely stony clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; few medium and fine roots; many distinct clay films on faces of peds and rock fragments; 70 percent rock fragments, mainly angular stones; slightly alkaline; clear wavy boundary.

Bk—18 to 32 inches; pale brown (10YR 6/3) extremely stony loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few medium and fine roots;

strongly effervescent; calcium carbonate is disseminated and also occurs as few fine seams and filaments and as coatings on undersides of rock fragments; 70 percent rock fragments, mainly angular stones; moderately alkaline; abrupt wavy boundary.

R—32 inches; hard fractured sandstone.

The depth to hard bedrock ranges from 20 to 40 inches. Rock fragments throughout the profile are mainly angular stones and a few cobbles and gravel. The rock fragments have a limestone or sandstone lithology. The Bt and Bk horizon have a fine-earth texture of clay loam or loam. They are 35 to 70 percent rock fragments. The Bt horizon is 25 to 35 percent clay. Reaction in the Bt horizon is neutral or slightly alkaline.

The Nathrop soils in map unit 114—Bachus-Nathrop complex, 4 to 20 percent slopes—are a taxadjunct to the Nathrop series because it does not have a horizon containing calcium carbonate. This difference, however, does not significantly affect the use or behavior of the soils.

Neldore Series

The Neldore series consists of shallow, well drained soils on hills and ridges. These soils formed in slopewash alluvium and residuum derived from shale. Slope ranges from 10 to 30 percent. Elevation is 5,400 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 100 to 110 days.

Typical pedon of Neldore clay in an area of Neldore-Moyerson-Rock outcrop complex, 10 to 30 percent slopes, 300 feet south and 2,300 feet west of the northeast corner of sec. 24, T. 38 N., R. 86 W.

A—0 to 2 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; moderate very fine granular structure; slightly hard, friable, very sticky and very plastic; few fine, medium, and coarse roots; neutral; abrupt smooth boundary.

C1—2 to 10 inches; light brownish gray (2.5Y 6/2) clay, grayish brown (2.5Y 5/2) moist; massive; very hard, firm, very sticky and very plastic; few fine roots; neutral; clear wavy boundary.

C2—10 to 16 inches; light brownish gray (2.5Y 6/2) clay, grayish brown (2.5Y 5/2) moist; massive; very hard, firm, very sticky and very plastic; few fine roots; 30 percent soft shale fragments; neutral; clear wavy boundary.

Cr—16 inches; soft platy shale.

The depth to soft bedrock ranges from 10 to 20 inches. The particle-size control section has a texture of clay or silty clay and is 40 to 55 percent clay. The content of soft shale fragments ranges from 5 to 35 percent and the content of hard shale channery fragments ranges from 0 to 15 percent throughout the profile. Reaction is neutral or slightly acid throughout the profile. The hue is 10YR or 2.5Y throughout the profile.

Nielsen Series

The Nielsen series consists of shallow, well drained soils on mountain ridges and dip slopes. These soils formed in residuum derived from quartzitic sandstone. Slope ranges from 2 to 10 percent. Elevation is 7,700 to 9,000 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 33 to 36 degrees F, and the frost-free period is less than 80 days. Frost is common in the summer months.

Typical pedon of Nielsen very flaggy loam in an area of Chittum-Nielsen-Rock outcrop complex, 2 to 10 percent slopes, 2,120 feet east and 1,280 feet south of the northwest corner of sec. 31, T. 41 N., R. 86 W.

A—0 to 2 inches; dark grayish brown (10YR 4/2) very flaggy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; 40 percent rock fragments, mainly flagstones; neutral; clear smooth boundary.

Bt1—2 to 8 inches; dark grayish brown (10YR 4/2) very flaggy clay loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; many fine roots; many distinct clay films on faces of peds and rock fragments; 55 percent rock fragments, mainly flagstones; neutral; clear wavy boundary.

Bt2—8 to 12 inches; yellowish brown (10YR 5/4) very flaggy clay loam, brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, friable, sticky and plastic; common fine roots; common distinct clay films on faces of peds and rock fragments; 40 percent rock fragments, mainly flagstones; neutral; abrupt smooth boundary.

R—12 inches; hard fractured quartzitic sandstone.

The depth to hard bedrock ranges from 10 to 20 inches. The content of rock fragments throughout the profile ranges from 35 to 60 percent. The rock fragments are mainly quartzitic sandstone flagstones and a few channery fragments. The Bt horizon has a fine-earth texture of loam or clay loam and is 20 to 32 percent clay.

Nunnston Series

The Nunnston series consists of very deep, well drained soils on alluvial fans and plateaus and in draws. These soils formed in alluvium from various sources. Slope ranges from 2 to 15 percent. Elevation is 6,800 to

7,600 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 80 to 100 days.

Typical pedon of Nunnston loam, 2 to 15 percent slopes, 2,300 feet west and 250 feet north of the southeast corner of sec. 36, T. 31 N., R. 78 W.

A—0 to 9 inches; very dark grayish brown (10YR 3/2) loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; many fine roots; neutral; clear smooth boundary.

Bt1—9 to 13 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; moderate fine angular blocky structure; hard, firm, sticky and plastic; many fine and medium roots; many distinct clay films on faces of peds; neutral; clear smooth boundary.

Bt2—13 to 27 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; coarse medium angular blocky structure; very hard, very firm, very sticky and very plastic; common fine and medium roots; many prominent clay films on faces of peds; slightly alkaline.

Bk—27 to 60 inches; very pale brown (10YR 7/3) clay loam, pale brown (10YR 6/3) moist; massive; hard, firm, sticky and plastic; few medium and coarse roots; violently effervescent; calcium carbonate is disseminated and also occurs as common fine and medium soft masses; moderately alkaline.

The content of rock fragments ranges from 0 to 10 percent throughout the profile. The Bt horizon has a texture of clay loam or clay and is 35 to 45 percent clay. The Bk horizon has a moderately alkaline or strongly alkaline reaction.

Oceanet Series

The Oceanet series consists of shallow, well drained soils on ridges and terrace breaks. These soils formed in residuum derived from sandstone. Slope ranges from 6 to 30 percent. Elevation is 5,600 to 6,200 feet. The annual precipitation is 7 to 9 inches, the annual temperature is 44 to 47 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Oceanet sandy loam in an area of Oceanet-Persayo complex, 6 to 30 percent slopes, SE$^1/_4$NW$^1/_4$ sec. 5, T. 37 N., R. 87 W.

A—0 to 2 inches; light yellowish brown (2.5Y 6/4) sandy loam, olive brown (2.5Y 4/4) moist; weak medium granular structure; slightly hard, very friable, nonsticky and nonplastic; many fine and medium roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C1—2 to 8 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common fine and medium roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

C2—8 to 14 inches; light olive brown (2.5Y 5/4) sandy loam, olive brown (2.5Y 4/4) moist; massive; soft, friable, slightly sticky and slightly plastic; few medium roots; slightly effervescent; disseminated calcium carbonate; 20 percent soft sandstone fragments; moderately alkaline; clear wavy boundary.

Cr—14 inches; soft sandstone.

The depth to soft bedrock ranges from 10 to 20 inches. Clay throughout the profile is 10 to 18 percent. Reaction is moderately alkaline or strongly alkaline throughout the profile. The C horizon has a texture of sandy loam or fine sandy loam. It has 0 to 35 percent soft sandstone fragments.

Orella Series

The Orella series consists of shallow, well drained soils on hills and ridges. These soils formed in residuum derived from sodic shale. Slope ranges from 3 to 30 percent. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Orella clay loam in an area of Orella-Cadoma-Petrie clay loams, 3 to 30 percent slopes, NE$^1/_4$NW$^1/_4$ sec. 1, T. 34 N., R. 86 W.

A—0 to 2 inches; pale olive (5Y 6/3) clay loam, olive (5Y 5/3) moist; moderate medium granular structure; slightly hard, friable, sticky and plastic; common fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C—2 to 10 inches; pale olive (5Y 6/3) clay loam, pale olive (5Y 6/3) moist; massive; very hard, firm, very sticky and very plastic; few medium and coarse roots; violently effervescent; disseminated calcium carbonate; very strongly alkaline; clear smooth boundary.

Cr—10 inches; soft sodic shale.

The depth to soft bedrock ranges from 10 to 20 inches. The hue is 2.5Y or 5Y throughout the profile. Reactions are moderately alkaline or strongly alkaline in the A horizon and strongly alkaline or very strongly alkaline in the C horizon. The C horizon has a texture of clay loam, silty clay loam, or clay and is 35 to 50 percent clay. It is 15 to 30 percent exchangeable sodium.

Orpha Series

The Orpha series consists of very deep, excessively drained soils on hills and stable dunes. These soils formed in eolian deposits derived dominantly from various sources. Slope ranges from 3 to 45 percent. Elevation is 5,300 to 6,400 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Orpha loamy sand, 10 to 30 percent slopes, 2,620 feet west and 1,350 feet north of the southeast corner of sec. 23, T. 34 N., R. 78 W.

A—0 to 2 inches; yellowish brown (10YR 5/4) loamy sand, dark grayish brown (10YR 4/2) moist; weak very fine granular structure; soft very friable, nonsticky and nonplastic; many fine medium and coarse roots; slightly alkaline; clear smooth boundary.

C—2 to 60 inches; light yellowish brown (10YR 6/4) loamy sand, yellowish brown (10YR 5/4) moist; single grain; loose, nonsticky and nonplastic; few fine, medium and coarse roots; slightly alkaline.

The texture is commonly loamy sand throughout the profile, but all or parts of some pedons have a texture of sand. Reaction is neutral or slightly alkaline throughout the profile.

Pagosa Series

The Pagosa series consists of deep, well drained soils in mountain valleys and on mountain dip slopes. These soils formed in slopewash alluvium and colluvium derived from various sources. Slope ranges from 4 to 20 percent. Elevation is 7,200 to 9,000 feet. The annual precipitation is 20 to 30 inches, the annual temperature is 33 to 38 degrees F, and the frost-free period is less than 90 days. Frost is common in the summer months.

Typical pedon of Pagosa loam in an area of Bachus-Pagosa association, 4 to 20 percent slopes, 925 feet north and 1,775 feet east of the southwest corner of sec. 24, T. 40 N., R. 78 W.

Oi—1 inch to 0; slightly decomposed pine needles and other forest litter.

A1—0 to 4 inches; very dark grayish brown (10YR 3/2) loam, black (10YR 2/1) moist; weak medium subangular blocky structure parting to moderate medium granular; slightly hard, friable, slightly sticky and slightly plastic; common medium roots; slightly acid; clear wavy boundary.

A2—4 to 8 inches; dark brown (10YR 3/3) loam, very dark brown (10YR 2/2) moist; moderate medium angular blocky structure parting to moderate fine angular blocky; slightly hard, friable, slightly sticky and slightly plastic; common medium and coarse roots; slightly acid; clear wavy boundary.

E—8 to 15 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; moderate coarse angular blocky structure; hard, friable, slightly sticky and slightly plastic; common medium and few coarse roots; moderately acid; gradual wavy boundary.

E/B—15 to 23 inches; 65 percent brown (10YR 5/3) and 35 percent brown (7.5YR 5/4) cobbly clay loam, dark brown (10YR 4/3) and dark brown (7.5YR 4/4) moist; strong medium angular blocky structure; hard, friable, sticky and plastic; few medium and coarse roots; common distinct clay films on faces of peds; 25 percent rock fragments, mainly cobbles; moderately acid; gradual wavy boundary.

B/E—23 to 29 inches; 80 percent brown (7.5YR 5/4) and 20 percent brown (10YR 5/3) cobbly clay, dark brown (7.5YR 4/4) and dark brown (10YR 4/3) moist; strong medium angular blocky structure; very hard, firm, sticky and plastic; few medium and coarse roots; many prominent clay films on faces of peds; 25 percent rock fragments, mainly cobbles; moderately acid; gradual wavy boundary.

Bt—29 to 43 inches; brown (7.5YR 5/4) cobbly clay, dark brown (7.5YR 4/4) moist; moderate medium angular blocky structure; very hard, firm, sticky and plastic; few medium and coarse roots; many prominent clay films on faces of peds; 25 percent rock fragments, mainly cobbles; moderately acid; gradual wavy boundary.

C—43 to 51 inches; light brown (7.5YR 6/4) cobbly clay loam, brown (7.5YR 5/4) moist; massive; hard, friable, sticky and plastic; 25 percent rock fragments, mainly cobbles; slightly acid.

R—51 inches; hard fractured quartzitic sandstone.

The depth to hard bedrock ranges from 40 to 60 inches. The Bt and C horizons have hue of 7.5YR or 10YR. The Bt horizon has a fine-earth texture of clay loam or clay. It is 35 to 50 percent clay and is 5 to 35 percent rock fragments. The C horizon has 15 to 35 percent rock fragments. It has a slightly acid or moderately acid reaction. The rock fragments in the B and C horizons are mainly cobbles and stones.

Pensore Series

The Pensore series consists of shallow, well drained soils on ridges. These soils formed in residuum derived from limestone. Slope ranges from 15 to 30 percent. Elevation is 6,600 to 7,800 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 80 to 100 days.

Typical pedon of Pensore very cobbly loam in an area of Crago-Pensore complex, 15 to 40 percent slopes, 500 feet south and 1,280 feet east of the northwest corner of sec. 27, T. 40 N., R. 89 W.

A—0 to 2 inches; brown (10YR 5/3) very cobbly loam, dark brown (10YR 4/3) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; strongly effervescent; disseminated calcium carbonate; 40 percent limestone fragments; moderately alkaline; clear smooth boundary.

Bk—2 to 10 inches; very pale brown (10YR 7/3) very cobbly loam, pale brown (10YR 6/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; few fine, medium, and coarse roots; violently effervescent; calcium carbonate is disseminated and also occurs as thick coatings on undersides of rock fragments; 40 percent limestone fragments; moderately alkaline; abrupt wavy boundary.

R—10 inches; hard fractured limestone.

The depth to hard bedrock ranges from 10 to 20 inches. The content of rock fragments throughout the profile ranges from 35 to 60 percent. The rock fragments are limestone and are mainly angular cobbles and gravel. Calcium carbonate equivalent in the Bk horizon is 40 to 60 percent.

Persayo Series

The Persayo series consists of shallow, well drained soils on ridges, hills, and terrace breaks. These soils formed in slopewash alluvium and residuum derived from shale and siltstone. Slope ranges from 6 to 30 percent. Elevation is 5,600 to 6,200 feet. The annual precipitation is 7 to 9 inches, the annual temperature is 44 to 47 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Persayo loam in an area of Persayo-Greybull association, 6 to 30 percent slopes, NW1/4SE1/4 sec. 15, T. 37 N., R. 89 W.

A—0 to 2 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; weak thick platy structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

AC—2 to 5 inches; pale brown (10YR 6/3) loam, grayish brown (2.5Y 5/2) moist; weak coarse angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium and few coarse roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C1—5 to 10 inches; light yellowish brown (2.5Y 6/4) clay loam, olive brown (2.5Y 4/4) moist; massive; hard, firm, sticky and plastic; few coarse roots; violently effervescent; disseminated calcium carbonate; strongly alkaline; gradual wavy boundary.

C2—10 to 15 inches; light yellowish brown (2.5Y 6/4) clay loam, olive brown (2.5Y 4/4) moist; massive; hard, firm, sticky and plastic; few coarse roots; violently effervescent; disseminated calcium carbonate; 10 percent soft shale fragments; strongly alkaline; clear wavy boundary.

Cr—15 inches; soft shale.

The depth to soft bedrock ranges from 10 to 20 inches. The particle-size control section is loam, clay loam, or sandy clay loam. It is 18 to 30 percent clay and is 0 to 15 percent soft shale fragments. The C horizon has hue of 10YR or 2.5Y. In some pedons this horizon has a layer with an accumulation of calcium carbonate. Reaction in the C horizon is moderately alkaline or strongly alkaline.

Pesmore Series

The Pesmore series consists of moderately deep, well drained soils on knolls and foothills. These soils formed in residuum, colluvium, and slopewash alluvium derived from granite. Slopes range from 15 to 55 percent. Elevation is 6,200 to 7,600 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 37 to 42 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Pesmore very gravelly sandy loam in an area of Pesmore-Asholler-Rock outcrop complex, 15 to 55 percent slopes, 1,250 feet south and 125 feet east of the northwest corner of sec. 35, T. 30 N., R. 89 W.

A—0 to 3 inches; brown (10YR 5/3) very gravelly sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; 30 percent gravel and 10 percent cobbles; slightly alkaline; clear smooth boundary.

Bw—3 to 9 inches; brown (10YR 5/3) very cobbly sandy clay loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; 20 percent cobbles and 20 percent gravel; slightly alkaline; clear wavy boundary.

Bk1—9 to 18 inches; light yellowish brown (10YR 6/4) very cobbly sandy clay loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; common fine roots; strongly effervescent; calcium carbonate is disseminated and also occurs as few medium soft masses and coatings on rock fragments; 25 percent cobbles and 20 percent gravel; moderately alkaline; clear wavy boundary.

Bk2—18 to 26 inches; light brownish gray (10YR 6/2) very cobbly sandy clay loam, grayish brown (10YR 5/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as common medium soft masses and coatings on rock fragments; 25 percent cobbles and 20 percent gravel; strongly alkaline.

R—26 inches; hard, fractured granite.

The depth to hard bedrock ranges from 20 to 40 inches. The A horizon has a neutral or slightly alkaline reaction. The Bw horizon has hue of 10YR or 7.5YR. The fine-earth texture in the Bw horizon is commonly sandy clay loam, but in some pedons it is loam or clay loam. The Bk horizon has fine-earth texture of sandy clay loam, loam, or clay loam and is 18 to 30 percent clay. The Bw and Bk horizons are 35 to 60 percent rock fragments. Reactions are slightly alkaline or moderately alkaline in the Bw horizon and moderately alkaline or strongly alkaline in the Bk horizon.

Petrie Series

The Petrie series consists of very deep, well drained, soils on alluvial fans, terraces, and foot slopes. In irrigated areas, these soils commonly are somewhat poorly drained. These soils formed in alluvium derived dominantly from sodic shale. Slope ranges from 0 to 8 percent. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Petrie clay loam in an area of Petrie-Arvada complex, 0 to 6 percent slopes, 1,780 feet east and 2,100 feet south of the northwest corner of sec. 6, T. 34 N., R. 81 W.

A—0 to 1 inch; light yellowish brown (2.5Y 6/4) clay loam, light olive brown (2.5Y 5/4) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and common medium roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

AC—1 to 5 inches; light yellowish brown (2.5Y 6/4) clay loam, light olive brown (2.5Y 5/4) moist; weak medium subangular blocky structure parting to moderate coarse granular; slightly hard, friable, slightly sticky and slightly plastic; common fine and few medium roots; strongly effervescent; disseminated calcium carbonate; strongly alkaline; clear wavy boundary.

C1—5 to 19 inches; light yellowish brown (2.5Y 6/4) clay, light olive brown (2.5Y 5/4) moist; massive; very hard, firm, sticky and plastic; few fine roots; strongly effervescent; disseminated calcium carbonate; strongly alkaline; gradual wavy boundary.

C2—19 to 60 inches; light yellowish brown (2.5Y 6/4) clay, light olive brown (2.5Y 5/4) moist; massive; very hard, very firm, sticky and plastic; few fine roots; strongly effervescent; disseminated calcium carbonate; very strongly alkaline.

The hue is 2.5Y or 10YR throughout the profile. Reactions are moderately alkaline or strongly alkaline in the A horizon and strongly alkaline or very strongly alkaline in the C horizon. Electrical conductivity in the A horizon is 2 to 4 millimhos per centimeter. The C horizon has a texture of clay loam, silty clay, or clay and is 35 to 50 percent clay. It has 15 to 30 percent exchangeable sodium. In most areas, the electrical conductivity in the C horizon ranges from 4 to 8 millimhos per centimeter. In map unit 235, however, the electrical conductivity in the C horizon ranges from 8 to 16 millimhos per centimeter. Also in map unit 235, the seasonal high The depth to the water table is 2 to 3 feet from May through September.

Peyton Series

The Peyton series consists of very deep, well drained soils on plateaus, foot slopes, and in swales. These soils formed in alluvium from various sources. Slopes range from 3 to 15 percent. Elevation is 5,800 to 7,600 feet. The annual precipitation is 12 to 19 inches, the annual temperature is 35 to 43 degrees F, and the frost-free period is 80 to 110 days.

Typical pedon of Peyton loam in an area of Peyton-Holderness loams, 3 to 15 percent slopes, 800 feet west and 1,800 feet north of the southeast corner of sec. 36, T. 33 N., R. 89 W.

A—0 to 3 inches; dark brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; moderate medium granular structure; soft, friable, slightly sticky and slightly plastic; many fine roots; neutral; clear smooth boundary.

Bt1—3 to 9 inches; dark brown (10YR 4/3) clay loam, dark brown (10YR 3/3) moist; weak medium prismatic structure parting to strong medium subangular blocky; hard, firm, sticky and plastic; many fine roots; many distinct clay films on faces of peds; clear wavy boundary.

Bt2—9 to 18 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; weak medium prismatic structure parting to strong medium subangular blocky; hard, firm, sticky and plastic; common fine roots; many distinct clay films on faces of peds; neutral; gradual wavy boundary.

BC—18 to 27 inches; pale brown (10YR 6/3) sandy clay loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; hard, friable slightly sticky and slightly plastic; few fine roots; 10 percent gravel; neutral; gradual wavy boundary.

C—27 to 60 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; massive; hard, friable, slightly sticky and slightly plastic 10 percent gravel; neutral.

The content of rock fragments ranges from 0 to 10 percent throughout the profile. The rock fragments are mainly gravel. The Bt and C horizons have hue of 10YR or 7.5YR. The Bt horizon has a texture of clay loam or sandy clay loam and is 20 to 35 percent clay. The C horizon commonly has a texture of sandy loam, sandy clay loam, or loam. In some pedons, however, it is sand below a depth of 40 inches.

Pinelli Series

The Pinelli series consists of very deep, well drained soils formed in alluvium derived from various sources. They are on alluvial fans, plateaus, and foot slopes. Slope ranges from 2 to 10 percent. Elevation is 6,200 to 7,400 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 37 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Pinelli loam in an area of Rock River-Pinelli-Blazon complex, 3 to 20 percent slopes, 1,200 feet south and 850 feet east of the northwest corner of sec. 14, T. 33 N., R. 89 W.

A—0 to 4 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; slightly alkaline; clear smooth boundary.

Bt1—4 to 16 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, firm, sticky and plastic; common medium and few fine and coarse roots; many distinct clay films on faces of peds; slightly alkaline; clear smooth boundary.

Bt2—16 to 24 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; strong fine and medium prismatic structure parting to strong fine and medium angular blocky; very hard, very firm, very sticky and very plastic; few medium and coarse roots; many faint and common distinct clay films on faces of peds; slightly alkaline; clear smooth boundary.

Btk—24 to 32 inches; light yellowish brown (10YR 6/4) clay loam, yellowish brown (10YR 5/4) moist; weak medium prismatic structure parting to moderate medium angular blocky; hard, firm, sticky and plastic; few coarse roots; common faint clay films on faces of peds; violently effervescent; calcium carbonate is disseminated and also occurs as many medium and coarse soft masses; moderately alkaline; clear smooth boundary.

Bk1—32 to 48 inches; pale yellow (2.5Y 7/4) clay loam, light olive brown (2.5Y 5/4) moist; massive; hard, firm, sticky and plastic; violently effervescent; calcium carbonate is disseminated and also occurs as many fine and medium soft masses and seams; strongly alkaline; clear smooth boundary.

Bk2—48 to 60 inches; pale yellow (2.5Y 7/4) loam, light yellowish brown (2.5Y 6/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; violently effervescent; calcium carbonate is disseminated and also occurs as common fine and medium seams; strongly alkaline.

The A and Bt horizons have neutral or slightly alkaline reactions. The Bt horizon has a texture of clay loam, clay, or silty clay and is 35 to 50 percent clay. The Bk horizon has hue of 2.5Y or 10YR and a texture of loam or clay loam. The Bk horizon has moderately alkaline or strongly alkaline reaction. Calcium carbonate equivalent in the Bk horizon ranges from 5 to 14 percent.

Pokeman Series

The Pokeman series consists of moderately deep, well drained soils on dip slopes. These soils formed in slopewash alluvium and residuum derived from gypsiferous bedrock. Slopes ranges from 2 to 12 percent. Elevation is 5,800 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 43 to 46 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Pokeman loam in an area of Pokeman-Threetop loams, 2 to 12 percent slopes, 300 feet north and 2,050 feet east of southwest corner of sec. 25, T. 41 N., R. 84 W.

A—0 to 1 inch; reddish brown (5YR 4/4) loam, dark reddish brown (5YR 3/4) moist; weak very fine granular structure; soft, friable, nonsticky and nonplastic; many medium, fine, and very fine roots; 5 percent gravel; slightly alkaline; abrupt smooth boundary.

Bt—1 to 4 inches; reddish brown (5YR 4/4) clay loam, dark reddish brown (5YR 3/4) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; many medium, fine, and very fine roots; many faint and few distinct clay films on faces of peds; 10 percent gravel; slightly alkaline; clear wavy boundary.

Btk—4 to 10 inches; reddish brown (5YR 5/4) clay loam, reddish brown (5YR 4/4) moist; weak coarse subangular blocky structure parting to moderate medium subangular blocky; slightly hard, friable, sticky and slightly plastic; common medium and fine roots; few distinct clay films on faces of peds; violently effervescent; disseminated calcium carbonate; 10 percent gravel; moderately alkaline; clear wavy boundary.

Bky—10 to 24 inches; light reddish brown (5YR 6/4) clay loam, light reddish brown (5YR 6/4) moist; weak medium subangular blocky structure; slightly hard, friable, sticky and slightly plastic; common very fine roots; violently effervescent; disseminated calcium carbonate; few fine and medium soft masses and filaments of gypsum; 10 percent gravel, 25 percent soft gypsum fragments; strongly alkaline; clear wavy boundary.

Cr—24 inches; soft gypsum bedrock with thin discontinuous lenses of hard fractured alabaster.

The depth to soft bedrock ranges from 20 to 40 inches. Rock fragments throughout the profile are mainly angular alabaster gravel. The A and Bky horizons have hue of 5YR or 7.5YR. The content of rock fragments is 0 to 10 percent in the A horizon and 5 to 15 percent in the Bt and Bky horizons. The Bt and Bky horizons have textures of loam or clay loam. The Bt horizon is 22 to 32 percent clay and has a slightly alkaline or moderately alkaline reaction. The Bky horizon is 10 to 35 percent soft gypsum fragments. Calcium carbonate equivalent in the Bky horizon ranges from 6 to 14 percent.

Poposhia Series

The Poposhia series consists of very deep, well drained soils in swales between hills. These soils formed in slopewash alluvium derived from sandstone and shale. Slope ranges from 3 to 10 percent. Elevation is 6,000 to 6,700 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Poposhia very fine sandy loam in an area of Poposhia-Blazon complex, 3 to 15 percent slopes, 1,820 feet south and 2,180 feet west of the northeast corner of sec. 17, T. 39 N., R. 85 W.

A—0 to 4 inches; brown (7.5YR 5/2) very fine sandy loam, dark brown (7.5YR 4/2) moist; moderate medium granular structure; soft, very friable, slightly sticky and nonplastic; common fine and medium roots; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

C—4 to 60 inches; brown (7.5YR 5/4) loam, dark brown (7.5YR 4/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few fine, medium, and coarse roots; violently effervescent; disseminated calcium carbonate; strongly alkaline.

The hue is 7.5YR or 10YR throughout the profile. The C horizon is 18 to 27 percent clay and is 0 to 10 percent rock fragments. It has a moderately alkaline or strongly alkaline reaction. In some pedons this horizon has a discontinuous layer with an accumulation of calcium carbonate.

Rawlins Series

The Rawlins series consists of very deep, well drained soils on hills, pediments, terraces, and alluvial fans. These soils formed in alluvium derived from various sources. Slope ranges from 2 to 20 percent. Elevation is 6,000 to 6,800 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 90 to 100 days.

Typical pedon of Rawlins sandy loam in an area of Rawlins-McFadden-Blackhall complex, 2 to 20 percent slopes, 1,125 feet north and 875 feet west of the southeast corner of sec. 25, T. 30 N., R. 85 W.

A—0 to 2 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; single grain; loose, slightly sticky and nonplastic; many fine roots; slightly alkaline; clear wavy boundary.

Bt—2 to 7 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; many distinct clay bridges on faces of peds; slightly alkaline; clear wavy boundary.

Bk1—7 to 18 inches; very pale brown (10YR 7/3) sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as a few soft cylindrical masses in root channels; 10 percent gravel; strongly alkaline; clear wavy boundary.

Bk2—18 to 60 inches; light gray (10YR 7/2) gravelly sandy loam, light brownish gray (10YR 6/2) moist; massive; slightly hard, very friable, nonsticky and nonplastic; violently effervescent; calcium carbonate is disseminated and also occurs as thick coatings on undersides of rock fragments; 25 percent gravel and 5 percent cobbles; strongly alkaline.

The particle-size control section averages 8 to 18 percent clay. The rock fragments throughout the profile are mainly gravel. The Bt and Bk horizons have hue of 10YR or 7.5YR. The Bt horizon is 0 to 15 percent rock fragments and the Bk horizon is 5 to 30 percent rock fragments. Reactions are slightly alkaline or moderately alkaline in the Bt horizon and moderately alkaline or strongly alkaline in the Bk horizon. Calcium carbonate equivalent in the Bk horizon is 10 to 25 percent and it is commonly more than 15 percent in some part of the horizon.

Razsun Series

The Razsun series consists of moderately deep, well drained soils on hillslopes. These soils formed in slopewash alluvium and residuum derived from gypsiferous shale. Slope ranges from 5 to 15 percent. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 120 to 130 days.

Typical pedon of Razsun clay loam in an area of Chipendale-Razsun clay loams, 3 to 15 percent slopes, 1,650 feet north and 2,400 feet west of the southeast corner of sec. 27, T. 40 N., R. 82 W.

A—0 to 3 inches; light brownish gray (2.5Y 6/2) clay loam, dark grayish brown (2.5Y 4/2) moist; weak medium platy structure parting to moderate medium granular; slightly hard, friable, slightly sticky and slightly plastic; many fine and common medium roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bw—3 to 11 inches; light brownish gray (2.5Y 6/2) clay, dark grayish brown (2.5Y 4/2) moist; weak medium prismatic structure parting to moderate medium subangular blocky; hard, firm, sticky and plastic; common fine and few coarse roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

By—11 to 21 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (2.5Y 4/2) moist; massive; hard, firm, sticky and plastic; common fine and few coarse roots; slightly effervescent; disseminated calcium carbonate; common threads and seams of gypsum, 25 percent gypsum; 75 percent soft shale fragments; moderately alkaline; clear smooth boundary.

Cr—21 inches; soft platy gypsiferous shale.

The depth to bedrock ranges from 20 to 40 inches. The particle-size control section is clay loam or clay. It is 35 to 45 percent clay and is less than 35 percent fine sand and coarser sand. The A and Bw horizons have hue of 10YR or 2.5Y. The By horizon is 40 to 80 percent soft shale fragments and 10 to 30 percent gypsum. Electrical conductivity in this horizon ranges from 2 to 8 millimhos per centimeter. The By horizon has a slightly alkaline or moderately alkaline reaction.

Redarrow Series

The Redarrow series consists of very shallow or shallow, well drained soils on pediment breaks. These soils formed in residuum derived from sandstone and siltstone. Slope ranges from 10 to 25 percent. Elevation is 5,600 to 6,600 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 46 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Redarrow loam in an area of Buffcreek-Redarrow association, 2 to 25 percent slopes, 1,110 feet east and 1,680 feet north of the southwest corner of sec. 23, T. 40 N., R. 85 W.

A—0 to 2 inches; reddish brown (5YR 5/4) loam, reddish brown (5YR 4/4) moist; weak fine granular structure; soft, very friable, slightly sticky and nonplastic; common fine and very fine roots; strongly effervescent; disseminated calcium carbonate; 10 percent angular siltstone gravel; moderately alkaline; clear smooth boundary.

C—2 to 18 inches; yellowish red (5YR 5/6) loam, yellowish red (5YR 4/6) moist; massive; soft, very friable, slightly sticky and nonplastic; few fine roots; strongly effervescent; disseminated calcium carbonate; 15 percent angular siltstone gravel; moderately alkaline; clear wavy boundary.

Cr—18 inches; soft red siltstone interbedded with soft red shale.

The depth to soft bedrock ranges from 8 to 20 inches. The A horizon has a slightly alkaline or moderately alkaline reaction. The C horizon has a moderately alkaline or strongly alkaline reaction. In some pedons the C horizon has threads of gypsum inherited from the parent material.

The C horizon has a fine-earth texture of loam, silt loam, clay loam, or silty clay loam. It is 10 to 18 percent noncarbonate clay, 3 to 12 percent calcium carbonate clay, and less than 15 percent fine sand and coarser sand. The C horizon is 0 to 25 percent rock fragments. The rock fragments are mainly angular gravel or channery fragments.

Redbank Series

The Redbank series consists of very deep, somewhat excessively drained soils on flood plains. These soils formed in alluvium derived dominantly from sandstone, siltstone, and shale. Slope ranges from 0 to 3 percent. Elevation is 5,600 to 6,100 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Redbank fine sandy loam in an area of Barnum-Redbank fine sandy loams, 0 to 3 percent slopes, 750 feet south and 1,100 feet east of the northwest corner of sec. 4, T. 40 N., R. 84 W.

A—0 to 6 inches; brown (7.5YR 5/4) fine sandy loam, dark brown (7.5YR 4/3) moist; weak medium and fine granular structure; soft, very friable, nonsticky and nonplastic; common medium and fine and many very fine roots; slightly alkaline; gradual wavy boundary.

C—6 to 60 inches; light reddish brown (5YR 6/4) sandy loam stratified with thin layers of loamy sand and fine sandy loam, reddish brown (5YR 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few fine, medium, and coarse roots; strongly effervescent; disseminated calcium carbonate; strongly alkaline.

The particle-size control section averages 10 to 18 percent clay. The content of rock fragments ranges from 0 to 10 percent throughout the profile. The rock fragments are mainly gravel. The A horizon has hue of 7.5YR or 5YR. Reactions are slightly alkaline or moderately alkaline in the A horizon and moderately alkaline or strongly alkaline in the C horizon. The C horizon has a dominant texture of sandy loam, but it is stratified with thin layers of loamy sand, fine sandy loam, or loam.

Redbow Series

The Redbow series consists of moderately deep, well drained soils on dip slopes. These soils formed in slopewash alluvium and residuum derived dominantly from limestone and siltstone. Slope ranges from 3 to 10 percent. Elevation is 5,500 to 6,800 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Redbow loam in an area of Redsun-Rock outcrop-Redbow complex, 3 to 15 percent slopes, 2,100 feet south and 1,100 feet west of the northeast corner of sec. 16, T. 40 N., R. 83 W.

A—0 to 3 inches; yellowish red (5YR 5/6) loam, yellowish red (5YR 4/6) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and very fine and common medium roots; violently effervescent; calcium carbonate is disseminated, 20 percent calcium carbonate equivalent; moderately alkaline; clear smooth boundary.

Bw—3 to 11 inches; yellowish red (5YR 5/8) loam, yellowish red (5YR 4/6) moist; weak medium prismatic structure parting to moderate fine subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common fine and few medium roots; violently effervescent; calcium carbonate is disseminated, 20 percent calcium carbonate equivalent; strongly alkaline; gradual wavy boundary.

Bk1—11 to 21 inches; yellowish red (5YR 5/8) loam, yellowish red (5YR 4/6) moist; weak coarse prismatic structure parting to weak medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as common fine and medium soft cylindrical masses in root channels, 30 percent calcium carbonate equivalent; strongly alkaline; gradual wavy boundary.

Bk2—21 to 27 inches; yellowish red (5YR 5/8) loam, yellowish red (5YR 4/6) moist; massive; soft, very friable, slightly sticky and slightly plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as few fine and medium soft cylindrical masses in root channels, 25 percent calcium carbonate equivalent; strongly alkaline; abrupt smooth boundary.

R—27 inches; hard fractured limestone.

The depth to hard bedrock ranges from 20 to 40 inches. The particle-size control section is 10 to 18 percent noncarbonate clay, 2 to 9 percent calcium carbonate clay, and less than 15 percent fine sand and coarser sand. The hue is 2.5YR or 5YR throughout the profile. The A and Bw horizons have moderately alkaline or strongly alkaline reactions. The Bw and Bk horizons have textures of loam or silt loam. The Bk horizon has an electrical conductivity of less than 4 millimhos per centimeter and a calcium carbonate equivalent of 15 to 35 percent.

Redspear Series

The Redspear series consists of shallow, well drained soils on dip slopes. These soils formed in residuum and slopewash alluvium derived dominantly from siltstone. Slope ranges from 3 to 15 percent. Elevation is 5,500 to 6,800 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Redspear loam in an area of Roughlock-Redbow-Redspear loams, 3 to 15 percent slopes, 1,650 feet west and 1,800 feet south of the northeast corner of sec. 13, T. 40 N., R. 84 W.

A—0 to 2 inches; reddish brown (5YR 4/4) loam, dark reddish brown (5YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and medium roots; moderately alkaline; clear smooth boundary.

Bw—2 to 9 inches; yellowish red (5YR 4/6) loam, dark reddish brown (5YR 3/4) moist; moderate coarse prismatic structure parting to moderate medium subangular blocky; soft, very friable, slightly sticky and slightly plastic; few fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

Bk—9 to 15 inches; yellowish red (5YR 5/6) loam, yellowish red (5YR 4/6) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; strongly effervescent; disseminated calcium carbonate; 15 percent angular siltstone gravel; moderately alkaline; abrupt smooth boundary.

R—15 inches; hard siltstone.

The depth to hard siltstone or hard limestone ranges from 10 to 20 inches. The hue is 2.5YR or 5YR throughout the profile. The Bk horizon has an electrical conductivity of less than 4 millimhos per centimeter and a calcium carbonate equivalent of 3 to 14 percent. Reaction in this horizon is moderately alkaline or strongly alkaline. The Bk horizon has a texture of loam or silt loam and is 10 to 18 percent noncarbonate clay, 2 to 9 percent calcium carbonate clay, and less than 15 percent fine sand and coarser sand. The content of rock fragments in the Bk horizon ranges from 5 to 15 percent. The rock fragments are mainly angular siltstone or limestone gravel.

Redsun Series

The Redsun series consists of very shallow or shallow, well drained soils on dip slopes. These soils formed in residuum derived from siltstone and limestone. Slope ranges from 3 to 30 percent. Elevation is 5,400 to 6,800 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Redsun very channery loam in an area of Redsun-Rock outcrop-Redbow complex, 3 to 15 percent slopes, 650 feet west and 2,500 feet north of the southeast corner of sec. 16, T. 40 N., R. 83 W.

A—0 to 4 inches; yellowish red (5YR 5/6) very channery loam, yellowish red (5YR 4/6) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; violently effervescent; disseminated calcium carbonate; 45 percent limestone rock fragments, mainly channery fragments; strongly alkaline; clear wavy boundary.

Bk—4 to 7 inches; light reddish brown (5YR 6/4) extremely flaggy loam, yellowish red (5YR 4/6) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; few fine roots; violently effervescent; moderately thick coatings of calcium carbonate on undersides of rock fragments; 75 percent limestone rock fragments, mainly flagstones; strongly alkaline; abrupt smooth boundary.

R—7 inches; hard fractured limestone.

The depth to hard bedrock is commonly less than 15 inches, but ranges from 4 to 20 inches. The particle-size control section is 10 to 18 percent noncarbonate clay, 2 to 9 percent calcium carbonate clay, and less than 15 percent fine sand and coarser sand. The hue is 7.5YR to 2.5YR throughout the profile. Reaction is moderately alkaline or strongly alkaline throughout the profile.

The Bk horizon has visible accumulations of calcium carbonate mainly as coatings on the undersides of rock fragments. Calcium carbonate equivalent in this horizon commonly ranges from 6 to 14 percent. In some pedons, however, this horizon has thin discontinuous layers with a calcium carbonate equivalent of 15 to 25 percent. The Bk horizon has a fine-earth texture of loam or silt loam. It is 35 to 80 percent rock fragments. The rock fragments are mainly channery fragments and flagstones.

Rekop Series

The Rekop series consists of shallow, well drained soils on hills. These soils formed in slopewash alluvium and residuum derived from gypsum, siltstone, and sandstone. Slope ranges from 5 to 40 percent. Elevation is 5,600 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 47 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Rekop loam in an area of Rekop-Rock outcrop complex, 5 to 40 percent slopes, 80 feet north and 2,300 feet east of the southwest corner of sec. 14, T. 40 N., R. 84 W.

A—0 to 1 inch; reddish brown (5YR 5/4) loam, reddish brown (5YR 4/4) moist; weak very fine granular structure; soft, very friable, nonsticky and nonplastic; common fine and very fine roots; violently effervescent; disseminated calcium carbonate; 5 percent gravel; moderately alkaline; abrupt smooth boundary.

AC—1 to 7 inches; reddish brown (5YR 5/3) loam, reddish brown (5YR 4/3) moist; weak medium and fine subangular blocky structure; slightly hard, friable, slightly sticky and nonplastic; common fine and very fine roots; violently effervescent; disseminated calcium carbonate; 5 percent gravel; strongly alkaline; clear wavy boundary.

C—7 to 12 inches; light reddish brown (5YR 6/4) silt loam, yellowish red (5YR 5/6) moist; massive; soft, friable, slightly sticky and slightly plastic; few very fine roots; violently effervescent; disseminated calcium carbonate; many residual seams and filaments, and few coarse soft masses of gypsum; 5 percent gravel; slightly alkaline; clear wavy boundary.

Cr—12 inches; soft pinkish white gypsum bedrock interbedded with thin lenses of soft sandstone.

The depth to soft bedrock ranges from 10 to 20 inches. The particle-size control section is 18 to 27 percent clay. The content of rock fragments ranges from 5 to 15 percent throughout the profile. The rock fragments are mainly angular alabaster and chert gravel. The hue is 2.5YR or 5YR throughout the profile.

The A horizon has a slightly alkaline or moderately alkaline reaction. Reaction in the C horizon is slightly alkaline to strongly alkaline. The C horizon has a texture of loam or silt loam. This horizon is 20 to 50 percent gypsum and has a calcium carbonate equivalent of 15 to 35 percent. The sum of the percent gypsum and the percent calcium carbonate equivalent ranges from 40 to 60 in the C horizon.

Relsob Series

The Relsob series consists of very deep, well drained soils on hills. These soils formed in alluvium derived dominantly from arkosic sandstone. Slope ranges from 3 to 15 percent. Elevation is 6,700 to 7,600 feet. The annual precipitation is 12 to 16 inches, the annual temperature is 36 to 43 degrees F, and the frost-free period is 80 to 100 days.

Typical pedon of Relsob sandy loam in an area of Relsob-Peyton sandy loams, 3 to 15 percent slopes, 200 feet east and 160 feet south of the northwest corner of sec. 20, T. 33 N., R. 88 W.

A—0 to 3 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; neutral; clear smooth boundary.

Bt1—3 to 8 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 4/3) moist; weak medium prismatic structure parting to moderate medium angular blocky; hard, firm, sticky and plastic; common fine roots; many distinct clay bridges and few distinct clay films on faces of peds; neutral; clear smooth boundary.

Bt2—8 to 16 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, firm, sticky and plastic; few medium roots; many distinct clay bridges on faces of peds; neutral; clear smooth boundary.

Bt3—16 to 19 inches; light yellowish brown (10YR 6/4) sandy clay loam, yellowish brown (10YR 5/4) moist; weak medium angular blocky structure; hard, firm, slightly sticky and slightly plastic; few medium roots; common distinct clay bridges on faces of peds; slightly alkaline; clear smooth boundary.

C—19 to 60 inches; brownish yellow (10YR 6/6) sand, yellowish brown (10YR 5/6) moist; single grain; loose, nonsticky and nonplastic; neutral.

The Bt horizon is 20 to 35 percent clay. Reaction in the Bt and 2C horizons is neutral or slightly alkaline. The 2C horizon has hue of 10YR or 2.5Y. The depth to the 2C horizon ranges from 14 to 20 inches.

Rencot Series

The Rencot series consists of very shallow or shallow, well drained soils on dip slopes, ridges, hills, and escarpments. These soils formed in residuum derived from sandstone. Slope ranges from 5 to 40 percent. Elevation is 6,000 to 7,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 36 to 43 degrees F, and the frost-free period is 80 to 110 days.

Typical pedon of Rencot gravelly loam in an area of Rencot-Duffson association, rolling, 90 feet west and 1,300 feet south of the northeast corner of sec. 31, T. 41 N., R. 84 W.

A—0 to 4 inches; yellowish brown (10YR 5/4) gravelly loam, dark brown (10YR 4/3) moist; weak medium and fine granular structure; soft, friable, nonsticky and nonplastic; many medium, fine and very fine roots; strongly effervescent; disseminated calcium carbonate; 20 percent gravel; moderately alkaline; clear wavy boundary.

Bk1—4 to 9 inches; yellowish brown (10YR 5/4) very gravelly loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; soft, friable, slightly sticky and slightly plastic; many very fine roots; strongly effervescent; calcium carbonate is disseminated and also occurs as thick coatings on rock fragments; 30 percent angular gravel and 5 percent angular cobbles; moderately alkaline; gradual wavy boundary.

Bk2—9 to 15 inches; pale brown (10YR 6/3) very cobbly loam, brown (10YR 5/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common very fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as thick coatings on rock fragments; 40 percent angular cobbles and 20 percent angular gravel; strongly alkaline; abrupt smooth boundary.

R—15 inches; hard sandstone.

The depth to hard bedrock ranges from 8 to 20 inches. The particle-size control section is 15 to 26 percent clay. The Bk horizon has hue of 10YR or 2.5Y. It has a fine-earth texture of sandy loam, sandy clay loam, or loam. This horizon is 35 to 70 percent rock fragments. The rock fragments are channery fragments, flagstones, angular cobbles, or angular gravel. Calcium carbonate equivalent in the Bk horizon ranges from 15 to 30 percent. The Bk horizon has a moderately alkaline or strongly alkaline reaction.

Renohill Series

The Renohill series consists of moderately deep, well drained soils in swales. These soils formed in slopewash alluvium and residuum derived from shale. Slope ranges from 3 to 6 percent. Elevation is 5,000 to 6,000 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Renohill clay loam in an area of Cadoma-Renohill-Samday clay loams, 3 to 12 percent slopes, 2,630 feet west of the southeast corner of sec. 21, T. 37 N., R. 80 W.

A—0 to 3 inches; pale brown (10YR 6/3) clay loam, dark brown (10YR 4/3) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; neutral; clear smooth boundary.

Bt—3 to 10 inches; grayish brown (2.5Y 5/2) clay, dark grayish brown (10YR 4/2) moist; strong medium prismatic structure parting to moderate medium angular blocky; very hard, firm, sticky and plastic; common fine roots, mainly along faces of peds; many prominent clay films on faces of peds; slightly alkaline; clear smooth boundary.

Btk—10 to 24 inches; light brownish gray (2.5Y 6/2) clay, dark grayish brown (10YR 4/2) moist; strong medium prismatic structure parting to moderate coarse angular blocky; very hard, firm, sticky and plastic; common fine roots mainly on faces of peds; many distinct clay films on faces of peds; strongly effervescent; calcium carbonate is disseminated and also occurs as common distinct coatings on faces of peds; moderately alkaline; gradual smooth boundary.

Bk—24 to 29 inches; light brownish gray (2.5Y 6/2) clay loam, grayish brown (2.5Y 5/2) moist; massive; hard, friable, sticky and plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as common fine threads and seams; strongly alkaline; clear smooth boundary.

Cr—29 inches; soft platy shale.

The depth to soft bedrock ranges from 20 to 40 inches. The hue is 10YR or 2.5Y throughout the profile. The A and Bt horizons have neutral or slightly alkaline reactions. Reaction in the Bk horizon is moderately alkaline or strongly alkaline. The Bt and Bk horizons have textures of clay or clay loam. The Bt horizon is 35 to 50 percent clay.

Rivra Series

The Rivra series consists of very deep, moderately well drained soils on flood plains. These soils formed in alluvium derived from various sources. Slope ranges from 0 to 6 percent. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 46 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Rivra sandy loam, 0 to 6 percent slopes, 2,250 feet east and 2,500 feet south of the northwest corner of sec. 2, T. 33 N., R. 78 W.

A—0 to 7 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; weak medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt wavy boundary.

C—7 to 60 inches; pale brown (10YR 6/3) very gravelly sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; few fine, medium, and coarse roots; slightly effervescent; disseminated calcium carbonate; 50 percent gravel; slightly alkaline.

The depth to the seasonal high water table is 3 to 5 feet from April through June. Reaction throughout the profile is slightly alkaline or moderately alkaline. The rock fragments throughout the profile are mainly gravel. The A horizon has 0 to 15 percent rock fragments. The C horizon has a fine-earth texture of sand or loamy coarse sand. It is 35 to 75 percent rock fragments. In many pedons, this horizon has several distinct stratified layers.

These Rivra soils are a taxadjunct to the Rivra series because they have a slightly warmer mean annual soil temperature than is allowed for the Rivra series. They have a mesic soil temperature regime. This difference, however, does not significantly affect their use or behavior.

Rock River Series

The Rock River series consists of very deep, well drained soils on alluvial fans, hillslopes, terrace breaks, and terraces. These soils formed in alluvium derived from various sources. Slope ranges from 0 to 20 percent. Elevation is 5,900 to 7,400 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 38 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Rock River sandy loam in an area of Rock River-Worfman sandy loams, 2 to 15 percent slopes, SW¼ sec. 6, T. 31 N., R. 84 W.

A—0 to 4 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 4/3) moist; moderate fine granular structure; soft, friable, nonsticky and nonplastic; many fine roots; slightly alkaline; clear smooth boundary.

Bt—4 to 18 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate fine and medium subangular blocky; hard, friable, sticky and plastic; common fine roots; many distinct clay bridges on faces of peds; slightly alkaline; clear smooth boundary.

Bk1—18 to 30 inches; pale brown (10YR 6/3) sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bk2—30 to 60 inches; very pale brown (10YR 7/3) sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; violently effervescent; disseminated calcium carbonate; moderately alkaline.

Reaction is neutral or slightly alkaline in the A horizon, slightly alkaline or moderately alkaline in the Bt horizon, and moderately alkaline or strongly alkaline in the Bk horizon.

The A horizon has a texture of sandy loam, fine sandy loam, or loamy sand. The Bt horizon has hue of 10YR or 7.5YR. This horizon has a dominant texture of sandy clay loam, but in some pedons, a small part of this horizon is sandy loam or fine sandy loam. This horizon averages 20 to 32 percent clay and is 35 to 50 percent fine sand and coarser sand. The Bk horizon has hue of 10YR or 2.5Y. It has a fine-earth texture of sandy loam, fine sandy loam, or sandy clay loam and is 0 to 25 percent rock fragments.

Roughlock Series

The Roughlock series consists of deep or very deep, well drained soils on toe slopes, foot slopes, alluvial fans, fan terraces, and dip slopes. These soils formed in alluvium derived dominantly from siltstone. Slope ranges from 0 to 15 percent. Elevation is 5,400 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Roughlock loam, 0 to 6 percent slopes, 1,150 feet north and 500 feet west of the southeast corner of sec. 9, T. 40 N., R. 84 W.

A—0 to 3 inches; reddish brown (5YR 4/4) loam, dark reddish brown (5YR 3/4) moist; weak medium granular structure; soft, friable, slightly sticky and slightly plastic; many very fine and fine roots; slightly alkaline; clear wavy boundary.

Bk1—3 to 11 inches; yellowish red (5YR 5/6) silt loam, yellowish red (5YR 4/6) moist; weak medium prismatic structure parting to weak medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; strongly effervescent; calcium carbonate is disseminated and also occurs as common faint coatings on faces of peds, 15 percent calcium carbonate equivalent; strongly alkaline; clear wavy boundary.

Bk2—11 to 25 inches; yellowish red (5YR 5/6) loam, yellowish red (5YR 4/6) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common fine and very fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as few soft cylindrical masses in root channels, 20 percent calcium carbonate equivalent; strongly alkaline; clear wavy boundary.

Bk3—25 to 32 inches; red (2.5YR 5/6) silt loam, red (2.5YR 4/6) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few very fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as few soft cylindrical masses in root channels, 15 percent calcium carbonate equivalent; strongly alkaline; gradual wavy boundary.

Bny—32 to 60 inches; red (2.5YR 5/6) silt loam, red (2.5YR 4/6) moist; massive, slightly hard, friable, slightly sticky and slightly plastic; strongly effervescent; calcium carbonate is disseminated, 10 percent calcium carbonate equivalent; few fine seams and filaments of gypsum; exchangeable sodium is 20 percent; strongly alkaline.

The depth to bedrock ranges from 40 to 60 inches or more. The hue is 2.5YR or 5YR throughout the profile. A thin vesicular crust is on the surface of some pedons. The A horizon has a slightly alkaline or moderately alkaline reaction. In some pedons this horizon is effervescent.

The Bk and Bny horizons have textures of loam, silt loam, clay loam, or silty clay loam. They have 10 to 18 percent noncarbonate clay, 1 to 12 percent calcium carbonate clay, and less than 15 percent fine sand and coarser sand. The Bk and Bny horizons have moderately alkaline or strongly alkaline reactions. Calcium carbonate equivalent is 15 to 30 percent in the Bk horizon and 5 to 15 percent in the Bny horizon. The Bny horizon has an electrical conductivity of 4 to 16 millimhos per centimeter. It has less than 1.5 percent gypsum and 10 to 25 percent exchangeable sodium.

Ryan Park Series

The Ryan Park series consists of very deep, well drained soils on terraces, hillslopes, stable dunes, and alluvial fans. These soils formed in alluvium and eolian deposits derived from sandstone. Slope ranges from 2 to 20 percent. Elevation is 5,900 to 7,000 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Ryan Park sandy loam in an area of Ryan Park-Elk Mountain sandy loams, 3 to 15 percent slopes, SE¼NE¼ sec. 1, T. 34 N., R. 89 W.

A—0 to 2 inches; grayish brown (10YR 5/2) sandy loam, dark grayish brown (10YR 4/2) moist; weak coarse granular structure; soft, very friable, nonsticky and nonplastic; many fine and medium roots; neutral; clear smooth boundary.

Bt1—2 to 9 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, friable, slightly sticky and slightly plastic; common medium and few coarse roots; many distinct clay bridges and few faint clay films on faces of peds; neutral; clear smooth boundary.

Bt2—9 to 13 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; weak coarse prismatic structure parting to weak medium angular blocky; slightly hard, very friable, slightly sticky and slightly plastic; few medium and coarse roots; many distinct clay bridges and few faint films on faces of peds; neutral; clear smooth boundary.

Btk—13 to 17 inches; pale brown (10YR 6/3) sandy loam, yellowish brown (10YR 5/4) moist; weak medium and coarse angular blocky structure; hard, friable, slightly sticky and slightly plastic; few coarse roots; common faint clay bridges on faces of peds; violently effervescent; calcium carbonate is disseminated and also occurs as common fine soft masses; moderately alkaline; clear smooth boundary.

Bk1—17 to 32 inches; light yellowish brown (10YR 6/4) sandy loam, dark yellowish brown (10YR 4/4) moist; massive; hard, friable, slightly sticky and slightly plastic; very few coarse roots; violently effervescent; calcium carbonate is disseminated and also occurs as common fine and medium soft masses; strongly alkaline; clear smooth boundary.

Bk2—32 to 60 inches; light yellowish brown (10YR 6/4) sandy loam, brown (10YR 5/3) moist; massive; very hard, friable, slightly sticky and slightly plastic; violently effervescent; calcium carbonate is disseminated and also occurs as many medium soft masses; strongly alkaline.

The A horizon has a neutral or slightly alkaline reaction. The Bt horizon has hue of 7.5YR or 10YR. It has a texture of sandy loam or fine sandy loam and is 8 to 18 percent clay. Reaction in this horizon is neutral to moderately alkaline.

The Bk horizon has a fine-earth texture of fine sandy loam, sandy loam, loamy sand, or loamy fine sand. It is 0 to 25 percent rock fragments. The rock fragments are mainly gravel. The Bk horizon has a calcium carbonate equivalent of 5 to 14 percent and a moderately alkaline or strongly alkaline reaction.

Saddle Series

The Saddle series consists of moderately deep, well drained soils on hills. These soils formed in slopewash alluvium and residuum derived from sandstone or sandy shale. Slope ranges from 6 to 15 percent. Elevation is 5,500 to 6,500 feet. The annual precipitation is 7 to 9 inches, the annual temperature is 44 to 46 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Saddle sandy loam in an area of Saddle-Griffy association, rolling, NW¼SE¼ sec. 12, T. 37 N., R. 89 W.

A—0 to 3 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 4/3) moist; weak medium granular structure; soft, very friable, nonsticky and nonplastic; many fine and medium and few coarse roots; slightly alkaline; clear smooth boundary.

Bt1—3 to 10 inches; pale brown (10YR 6/3) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate fine and medium angular blocky; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium and few coarse roots; many distinct clay bridges and common faint clay films on faces of peds; slightly alkaline; clear smooth boundary.

Bt2—10 to 14 inches; light yellowish brown (10YR 6/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium angular blocky structure; hard, friable, sticky and plastic; few medium and coarse roots; many distinct clay bridges and few faint clay films on faces of peds; slightly alkaline; clear smooth boundary.

Btk—14 to 18 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; weak medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; few coarse roots; common faint clay bridges and few faint clay films on faces of peds; violently effervescent; calcium carbonate is disseminated and also occurs as many fine soft masses; moderately alkaline; gradual wavy boundary.

Bk—18 to 30 inches; very pale brown (10YR 7/4) sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; violently effervescent; calcium carbonate is disseminated and also occurs as many fine and medium soft masses and seams; strongly alkaline; gradual wavy boundary.

Cr—30 inches; soft sandstone.

The depth to soft bedrock ranges from 20 to 40 inches. The A horizon has a neutral or slightly alkaline reaction. The Bk horizon has hue of 10YR or 2.5Y and a texture of sandy loam or fine sandy loam. Calcium carbonate equivalent in this horizon ranges from 5 to 10 percent.

Samday Series

The Samday series consists of very shallow or shallow, well drained soils on ridges and hills. These soils formed in residuum derived from shale. Slope ranges from 3 to 60 percent. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Samday clay loam in an area of Cadoma-Renohill-Samday clay loams, 3 to 12 percent slopes, 400 feet south of the northeast corner of sec. 26, T. 37 N., R. 81 W.

A—0 to 4 inches; light brownish gray (2.5Y 6/2) clay loam, dark grayish brown (2.5Y 4/2) moist; moderate fine granular structure; slightly hard, friable, sticky and plastic; many fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

C—4 to 13 inches; light brownish gray (2.5Y 6/2) clay, dark grayish brown (2.5Y 4/2) moist; thin platy shale rock structure; hard, firm, sticky and plastic; common fine roots; strongly effervescent; calcium carbonate is disseminated and also occurs as few fine threads and seams; few fine threads and seams of gypsum; 80 percent soft shale fragments; moderately alkaline; clear smooth boundary.

Cr—13 inches; soft platy shale.

The depth to soft bedrock ranges from 6 to 20 inches. The particle-size control section has a texture of clay, clay loam, or silty clay and is 35 to 50 percent clay. Hue throughout the profile is commonly 2.5Y, but ranges from 5Y to 10YR. Reaction is moderately alkaline or strongly alkaline throughout the profile.

The A horizon is commonly less than 5 percent rock fragments, but in some pedons it is as much as 50 percent rock fragments. The C horizon is 50 to 90 percent soft weathered shale fragments which break down easily into soil material when moistened and rubbed. The calcium carbonate and gypsum in the C horizon are inherited from the parent material with only slight alteration.

Savageton Series

The Savageton series consists of moderately deep, well drained soils on hills. These soils formed in slopewash alluvium and residuum derived dominantly from shale. Slope ranges from 3 to 25 percent. Elevation is 5,200 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual air temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Savageton gravelly clay in an area of Savageton-Samday complex, 3 to 15 percent slopes, 2,080 feet west and 910 feet north of the southeast corner of sec. 23, T. 33 N., R. 80 W.

A—0 to 2 inches; very pale brown (10YR 7/4) gravelly clay, yellowish brown (10YR 5/4) moist; moderate thin platy structure; hard, friable, sticky and plastic; strongly effervescent; disseminated calcium carbonate; 15 percent gravel; moderately alkaline; abrupt smooth boundary.

Bw—2 to 16 inches; pale yellow (2.5Y 7/4) clay, light olive brown (2.5Y 5/4) moist; moderate coarse prismatic structure parting to moderate medium angular blocky; very hard, firm, sticky and plastic; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bky—16 to 26 inches; pale yellow (2.5Y 7/4) clay, light olive brown (2.5Y 5/4) moist; massive; very hard, firm, sticky and plastic; violently effervescent; calcium carbonate is disseminated and also occurs as few medium soft masses; few fine clusters of gypsum crystals; moderately alkaline; gradual smooth boundary.

C—26 to 37 inches; pale yellow (2.5Y 7/4) clay, light olive brown (2.5Y 5/4) moist; massive; very hard, firm, sticky and plastic; strongly effervescent; disseminated calcium carbonate; moderately alkaline.

Cr—37 inches; soft platy shale.

The depth to soft bedrock ranges from 20 to 40 inches. The particle-size control section has a texture of clay or clay loam. It is 35 to 50 percent clay and is less than 5 percent rock fragments. The A horizon has hue of 2.5Y or 10YR. It is 0 to 25 percent rock fragments. The rock fragments in this horizon are mainly gravel and a few cobbles and stones. The Bky and C horizons have moderately alkaline or strongly alkaline reactions. The C horizon is absent in some pedons.

Sebud Series

The Sebud series consists of very deep, well drained soils on mountain slopes and canyon sides. These soils formed in colluvium derived dominantly from granite. Slope ranges from 40 to 65 percent. Elevation is 6,500 to 9,000 feet. The annual precipitation is 20 to 25 inches, the annual temperature is 33 to 36 degrees F, and the frost-free period is less than 90 days. Frost is common in the summer months.

Typical pedon of Sebud very stony loam in an area of Irson-Sebud complex, 40 to 65 percent slopes, 1,350 feet west and 950 feet south of the northeast corner of sec. 12, T. 33 N., R. 79 W.

Oe—3 inches to 0; intermediately decomposed pine needles and other forest litter.

A—0 to 4 inches; dark brown (10YR 3/3) very stony loam, very dark brown (10YR 2/2) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium roots; 10 percent gravel, 15 percent cobbles, and 25 percent stones; neutral; clear wavy boundary.

Bw—4 to 14 inches; dark brown (10YR 4/3) very stony loam, very dark grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; soft, very friable, slightly sticky and slightly plastic; common medium and coarse roots; 10 percent gravel, 15 percent cobbles, and 25 percent stones; neutral; clear wavy boundary.

C—14 to 60 inches; yellowish brown (10YR 5/4) very stony loam, dark brown (10YR 4/3) moist; massive; soft, very friable, slightly sticky and slightly plastic; common medium and coarse roots; 10 percent gravel, 15 percent cobbles, and 25 percent stones; neutral.

The particle-size control section is 20 to 27 percent clay. The content of rock fragments throughout the profile ranges from 40 to 60 percent. The rock fragments are mainly cobbles and stones.

Shingle Series

The Shingle series consists of shallow, well drained soils on ridges, escarpments, and hills. These soils formed in slopewash alluvium and residuum derived from shale, siltstone, and sandstone. Slope ranges from 3 to 45 percent. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Shingle loam in an area of Shingle-Theedle association, rolling, SE¼NE¼SW¼ sec. 7, T. 36 N., R. 85 W.

A—0 to 1 inch; grayish brown (2.5Y 5/2) loam, dark grayish brown (2.5Y 4/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many medium and fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

C—1 to 11 inches; light brownish gray (2.5Y 6/2) loam, grayish brown (2.5Y 5/2) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; many medium and fine roots to a depth of 4 inches, common medium and fine roots below; violently effervescent; disseminated calcium carbonate; 10 percent soft shale fragments; strongly alkaline; clear wavy boundary.

Cr—11 inches; soft sandy shale.

The depth to soft bedrock ranges from 10 to 20 inches. The particle-size control section averages 20 to 32 percent clay. The hue is 7.5YR to 2.5Y throughout the profile. Reaction in the A horizon is slightly alkaline or moderately alkaline. The C horizon has a texture of loam, clay loam, or sandy clay loam and is 0 to 15 percent soft shale or sandstone fragments. It has a moderately alkaline or strongly alkaline reaction.

Silhouette Series

The Silhouette series consists of very deep, well drained soils on terraces and fans. These soils formed in alluvium derived dominantly from shale. Slope ranges from 0 to 6 percent. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Silhouette clay loam, 0 to 6 percent slopes, 2,000 feet south and 200 feet west of the northeast corner of sec. 9, T. 40 N., R. 82 W.

A—0 to 3 inches; grayish brown (10YR 5/2) clay loam, dark grayish brown (10YR 4/2) moist; weak medium platy structure parting to weak fine granular; slightly hard, friable, slightly sticky and slightly plastic; many fine and common medium roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bw—3 to 11 inches; grayish brown (10YR 5/2) clay, dark grayish brown (10YR 4/2) moist; strong coarse prismatic structure parting to moderate coarse subangular blocky; hard, firm, sticky and plastic; common fine and medium roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

Bk—11 to 17 inches; grayish brown (10YR 5/2) clay, dark grayish brown (10YR 4/2) moist; massive; hard, firm, sticky and plastic; few fine and medium roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

Bky—17 to 60 inches; grayish brown (10YR 5/2) clay, dark grayish brown (10YR 4/2) moist; massive; hard, firm, sticky and plastic; few fine roots; strongly effervescent; disseminated calcium carbonate; few fine seams and filaments of gypsum; strongly alkaline.

The hue is 10YR to 2.5Y throughout the profile. Reaction is slightly alkaline or moderately alkaline in the A horizon and slightly alkaline to strongly alkaline in the Bw horizon. The Bk and Bky horizons have texture of clay loam, silty clay, or clay. They have moderately alkaline or strongly alkaline reactions.

Sneffels Series

The Sneffels series consists of moderately deep, well drained soils on mountain slopes and dip slopes. These soils formed in slopewash alluvium and residuum derived from sandstone. Slope ranges from 5 to 15 percent. Elevation is 7,000 to 8,000 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 33 to 36 degrees F, and the frost-free period is less than 90 days. Frost is common in the summer months.

Typical pedon of Sneffels loam in an area of Chittum-Sneffels loams, 5 to 40 percent slopes, SE¼NW¼ sec. 36, T. 32 N., R. 79 W.

A1—0 to 3 inches; dark grayish brown (10YR 4/2) loam, very dark grayish brown (10YR 3/2) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; many fine roots; neutral; clear smooth boundary.

A2—3 to 11 inches; dark brown (10YR 4/3) loam, dark brown (10YR 3/3) moist; moderate fine and medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine roots; neutral; clear smooth boundary.

Bt1—11 to 17 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; moderate fine and medium prismatic structure parting to moderate medium angular blocky; hard, firm, sticky and plastic; common fine roots; many faint and few distinct clay films on faces of peds; slightly alkaline; clear smooth boundary.

Bt2—17 to 27 inches; yellowish brown (10YR 5/4) clay, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to strong fine and medium angular blocky; hard, firm, sticky and plastic; few fine roots; common prominent clay films on faces of peds; slightly alkaline; abrupt smooth boundary.

R—27 inches; hard fractured sandstone.

The depth to hard bedrock ranges from 20 to 40 inches. The A horizon has a slightly acid or neutral reaction. The Bt horizon has hue of 7.5YR or 10YR and a fine-earth texture of clay loam or clay. It is 35 to 45 percent clay and is 0 to 25 percent channery fragments. This horizon has a neutral or slightly alkaline reaction.

Starley Series

The Starley series consists of very shallow or shallow, well drained soils on mountains and hills. These soils formed in residuum derived from limestone. Slope ranges from 4 to 65 percent. Elevation is 6,500 to 8,900 feet. The annual precipitation is 15 to 25 inches, the annual temperature is 32 to 37 degrees F, and the frost-free period is less than 80 days. Frost is common in the summer months.

Typical pedon of Starley cobbly loam in an area of Starley-Rock outcrop complex, 4 to 25 percent slopes, 2,450 feet north and 1,780 feet west of the southeast corner of sec. 30, T. 41 N., R. 85 W.

A—0 to 3 inches; dark brown (10YR 4/3) cobbly loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; 25 percent limestone fragments, mainly angular cobbles; neutral; clear smooth boundary.

AB—3 to 8 inches; brown (10YR 5/3) cobbly loam, dark brown (10YR 3/3) moist; weak medium subangular blocky structure parting to weak fine granular; soft, friable, nonsticky and nonplastic; many fine roots; 30 percent limestone fragments, mainly angular cobbles; slightly alkaline; clear smooth boundary.

Bk1—8 to 13 inches; pale brown (10YR 6/3) very cobbly clay loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; strongly effervescent; disseminated calcium carbonate; 40 percent limestone fragments, mainly angular cobbles; moderately alkaline; clear smooth boundary.

Bk2—13 to 18 inches; very pale brown (10YR 8/3) very cobbly loam, very pale brown (10YR 7/3) moist; hard, friable, slightly sticky and slightly plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as few thin coatings on undersides of rock fragments; 50 percent limestone fragments, mainly angular cobbles; moderately alkaline; abrupt smooth boundary.

R—18 inches; hard fractured limestone.

The depth to hard bedrock ranges from 7 to 20 inches. The A horizon is 20 to 45 percent rock fragments. It has a neutral to moderately alkaline reaction. The Bk horizon has a moderately alkaline or strongly alkaline reaction. It has a fine-earth texture of loam or clay loam and averages 35 to 60 percent rock fragments. The rock fragments are mainly angular cobbles and a few gravel and stones. The Bk horizon is 20 to 30 percent clay and is 15 to 35 percent fine sand and coarser sand.

Stunner Series

The Stunner series consists of very deep, well drained soils on terraces and plateaus. These soils formed in alluvium derived from various sources. Slope ranges from 3 to 15 percent. Elevation is 6,000 to 7,400 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 37 to 43 degrees and the frost-free period is 90 to 110 days.

Typical pedon of Stunner sandy loam in an area of Stunner-Pinelli complex, 3 to 15 percent slopes, SW¹/₄NW¹/₄ sec. 3, T. 32 N., R. 89 W.

A—0 to 3 inches; grayish brown (10YR 5/2) sandy loam, very dark grayish brown (10YR 3/2) moist; weak coarse granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and medium roots; neutral; clear smooth boundary.

Bt—3 to 17 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate fine and medium angular blocky; hard, firm, sticky and plastic; common fine and medium, and few coarse roots; many faint clay films on faces of peds; slightly alkaline; clear smooth boundary.

Btk—17 to 23 inches; yellowish brown (10YR 5/4) clay loam, olive brown (2.5Y 4/4) moist; weak medium angular blocky structure; hard, firm, sticky and plastic; few medium and coarse roots; few faint clay films on faces of peds; violently effervescent; calcium carbonate is disseminated and also occurs as common fine and medium soft masses; moderately alkaline; clear smooth boundary.

Bk1—23 to 44 inches; light gray (10YR 7/2) loam, light olive brown (2.5Y 5/4) moist; massive; slightly hard, friable, sticky and slightly plastic; few coarse roots; violently effervescent; calcium carbonate is disseminated and also occurs as many medium and coarse threads; strongly alkaline; gradual wavy boundary.

Bk2—44 to 60 inches; light gray (2.5Y 7/2) loam, grayish brown (2.5Y 5/2) moist; massive; slightly hard, firm, sticky and slightly plastic; violently effervescent; calcium carbonate is disseminated and also occurs as many medium and coarse threads; 15 percent soft siltstone fragments; strongly alkaline.

The rock fragments in the B horizons are mainly gravel. The Bt horizon has a texture of loam or clay loam. It is 20 to 35 percent clay and is 0 to 10 percent rock fragments. This horizon has a neutral or slightly alkaline reaction. The Bk horizon has hue of 10YR or 2.5Y. It is 0 to 15 percent rock fragments. Calcium carbonate equivalent in this horizon is 15 to 35 percent and it is commonly more than 25 percent in some part of the horizon. The Bk horizon has a moderately alkaline or strongly alkaline reaction.

Some pedons have a 2Bk horizon below a depth of about 45 inches. The 2Bk horizon has hue of 10YR and a texture of coarse sand or gravelly coarse sand. It is 10 to 25 percent rock fragments. Reaction in this horizon is moderately alkaline or strongly alkaline.

Sunup Series

The Sunup series consists of shallow, well drained soils on dip slopes. These soils formed in residuum derived from sandstone. Slope ranges from 6 to 30 percent. Elevation is 5,400 to 6,700 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Sunup very gravelly loam in an area of Sunup-Kishona-Rock outcrop complex, 10 to 30 percent slopes, NE¹/₄NW¹/₄ sec. 2, T. 34 N., R. 84 W.

A—0 to 4 inches; yellowish brown (10YR 5/4) very gravelly loam, dark yellowish brown (10YR 4/4) moist; weak fine granular structure; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium roots; violently effervescent; disseminated calcium carbonate; 40 percent angular sandstone fragments, mainly gravel; moderately alkaline; clear smooth boundary.

C—4 to 13 inches; light yellowish brown (10YR 6/4) very gravelly loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few medium roots; violently effervescent; calcium carbonate is disseminated and also occurs as few medium masses of calcium carbonate; 40 percent angular sandstone fragments, mainly gravel; moderately alkaline; abrupt wavy boundary.

R—13 inches; hard fractured sandstone.

The depth to hard bedrock ranges from 10 to 20 inches. The particle-size control section has a fine-earth texture of loam or sandy clay loam and is 18 to 28 percent clay. The content of rock fragments throughout the profile ranges from 35 to 60 percent. The rock fragments are mainly angular gravel. The C horizon has a moderately alkaline or strongly alkaline reaction.

Taluce Series

The Taluce series consists of very shallow or shallow, well drained soils on escarpments and hills. These soils formed in residuum derived from sandstone. Slope ranges from 6 to 40 percent. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Taluce sandy loam in an area of Bowbac-Taluce-Terro complex, 6 to 20 percent slopes, 50 feet north and 100 feet east of the southwest corner of sec. 31, T. 38 N., R. 78 W.

A—0 to 4 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; moderate fine and medium granular structure; soft, very friable, nonsticky and nonplastic; common fine roots; slightly effervescent; disseminated calcium carbonate; slightly alkaline; clear smooth boundary.

C—4 to 9 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; weak medium platy rock structure; slightly hard, very friable, nonsticky and nonplastic; common fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Cr—9 inches; soft platy sandstone.

The depth to soft bedrock ranges from 6 to 20 inches. The particle-size control section has a texture of sandy loam or fine sandy loam and is 10 to 18 percent clay. The content of rock fragments ranges from 0 to 10 percent throughout the profile. The A horizon has a slightly alkaline or moderately alkaline reaction. The C horizon has hue of 10YR or 2.5Y and a moderately alkaline or strongly alkaline reaction. In some pedons the C horizon has a layer with a slight accumulation of calcium carbonate.

Taluce Variant

The Taluce Variant consists of shallow, well drained soils on hill crests. These soils formed in residuum derived from sandstone. Slope ranges from 10 to 45 percent. Elevation is 5,800 to 6,200 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 40 to 42 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Taluce Variant fine sandy loam in an area of Gateridge-Taluce Variant association, steep, 1,100 feet north and 1,300 feet west of the southeast corner of sec. 22, T. 40 N., R. 77 W.

A—0 to 5 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; 5 percent channery fragments; neutral; clear smooth boundary.

C—5 to 15 inches; light brown (7.5YR 6/4) fine sandy loam, brown (7.5YR 5/4) moist; massive; slightly hard, very friable, nonsticky and nonplastic; few fine and medium roots; 5 percent channery fragments; neutral; clear smooth boundary.

Cr—15 inches; soft sandstone.

The depth to soft bedrock ranges from 10 to 20 inches. The content of rock fragments throughout the profile ranges from 5 to 15 percent. The rock fragments are mainly sandstone and ironstone channery fragments and flagstones. The C horizon has hue of 7.5YR or 10YR and is 10 to 18 percent clay.

Terro Series

The Terro series consists of moderately deep, well drained soils on hills. These soils formed in slopewash alluvium and residuum derived from sandstone. Slope ranges from 3 to 15 percent. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Terro fine sandy loam in an area of Bowbac-Taluce-Terro complex, 6 to 20 percent slopes, SW¼NW¼ sec. 30, T. 37 N., R. 87 W.

A—0 to 3 inches; brown (10YR 5/3) fine sandy loam, dark grayish brown (10YR 4/2) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; neutral; clear smooth boundary.

Bt—3 to 17 inches; yellowish brown (10YR 5/4) fine sandy loam, dark yellowish brown (10YR 4/4) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; many distinct clay bridges on faces of peds; slightly alkaline; gradual wavy boundary.

Bk—17 to 34 inches; very pale brown (10YR 7/4) fine sandy loam, yellowish brown (10YR 5/4) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Cr—34 inches; soft sandstone.

The depth to soft bedrock ranges from 20 to 40 inches. The hue is 2.5Y or 10YR throughout the profile. Reactions in the A and Bt horizons are neutral or slightly alkaline. The Bk horizon has a moderately alkaline or strongly alkaline reaction. The Bt and Bk horizons have textures of fine sandy loam or sandy loam. The Bt horizon is 12 to 18 percent clay.

Theedle Series

The Theedle series consists of moderately deep, well drained soils on hillsides. These soils formed in slopewash alluvium and residuum derived from siltstone, sandstone, and shale. Slope ranges from 4 to 30 percent. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Theedle clay loam in an area of Theedle-Shingle-Kishona complex, 6 to 40 percent slopes, gullied in sec. 19, T. 30 N., R. 81 W.

A—0 to 3 inches; light brownish gray (10YR 6/2) clay loam, grayish brown (10YR 5/2) moist; moderate medium platy structure parting to moderate fine granular; soft, friable, slightly sticky and slightly plastic; many fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

AC—3 to 9 inches; light brownish gray (10YR 6/2) clay loam, grayish brown (10YR 5/2) moist; weak medium subangular blocky structure; hard, firm, sticky and plastic; common fine and medium roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

C—9 to 27 inches; light gray (10YR 7/2) clay loam, grayish brown (10YR 5/2) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine, medium and coarse roots; violently effervescent; disseminated calcium carbonate; strongly alkaline; clear wavy boundary.

Cr—27 inches; soft platy shale.

The depth to soft bedrock ranges from 20 to 40 inches. The content of rock fragments throughout the profile ranges from 0 to 15 percent. The rock fragments commonly are shale or sandstone channery fragments. The hue is 10YR or 2.5Y throughout the profile. The A horizon has a slightly alkaline or moderately alkaline reaction. The C horizon has a texture of loam or clay loam. It has a moderately alkaline or strongly alkaline reaction.

Thermopolis Series

The Thermopolis series consists of shallow, well drained soils on dip slopes and hills. These soils formed in colluvium and residuum derived from siltstone and sandstone. Slope ranges from 10 to 40 percent. Elevation is 6,200 to 7,400 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 37 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Thermopolis loam in an area of Fiveoh-Thermopolis association, hilly, 1,500 feet south and 1,880 feet west of the northeast corner of sec. 2, T. 38 N., R. 87 W.

A—0 to 5 inches; red (2.5YR 4/6) loam, dark red (2.5YR 3/6) moist; weak coarse granular structure; soft, friable, slightly sticky and slightly plastic; many fine roots; violently effervescent; disseminated calcium carbonate; 10 percent soft siltstone fragments; moderately alkaline; gradual smooth boundary.

C—5 to 16 inches; red (2.5YR 5/6) loam, red (2.5YR 4/6) moist; massive; soft, friable, slightly sticky and slightly plastic; few medium roots; violently effervescent; disseminated calcium carbonate; 20 percent soft siltstone fragments; moderately alkaline; clear smooth boundary.

Cr—16 inches; soft siltstone.

The depth to soft bedrock ranges from 10 to 20 inches. The particle-size control section is 18 to 27 percent clay. The content of channery fragments throughout the profile is 0 to 25 percent. The hue is 2.5YR or 5YR throughout the profile. The C horizon has a moderately alkaline or strongly alkaline reaction. In some pedons this horizon has a layer with a slight accumulation of calcium carbonate.

Threetop Series

The Threetop series consists of moderately deep, well drained soils on dip slopes. These soils formed in slopewash alluvium and residuum derived from sandstone. Slope ranges from 3 to 12 percent. Elevation is 5,800 to 6,700 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 47 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Threetop sandy loam in an area of Threetop-Sunup-Frontier complex, 3 to 20 percent slopes, 1,820 feet south and 2,200 feet east of the northwest corner of sec. 8, T. 37 N., R. 85 W.

A—0 to 2 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; slightly alkaline; clear wavy boundary.

Bt1—2 to 7 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, slightly sticky and slightly plastic; many fine roots; common distinct clay films on faces of peds; 10 percent angular sandstone gravel; slightly alkaline; clear wavy boundary.

Bt2—7 to 13 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium subangular blocky; hard, friable, slightly sticky and slightly plastic; many fine roots; common distinct clay films on faces of peds; slightly effervescent; disseminated calcium carbonate; 10 percent angular sandstone gravel; moderately alkaline; clear wavy boundary.

Bk1—13 to 18 inches; pale brown (10YR 6/3) sandy clay loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; common fine roots; violently effervescent; disseminated calcium carbonate; 10 percent angular sandstone gravel; moderately alkaline; gradual wavy boundary.

2Bk2—18 to 24 inches; very pale brown (10YR 7/3) very gravelly sandy loam, pale brown (10YR 6/3) moist; massive; slightly hard, friable, nonsticky and nonplastic; violently effervescent; calcium carbonate is disseminated and also occurs as thick coatings on undersides of gravel; 45 percent angular sandstone gravel; strongly alkaline; abrupt smooth boundary.

2R—24 inches; hard argillaceous sandstone.

The depth to bedrock ranges from 20 to 40 inches. Rock fragments in the A and B horizons are mainly angular sandstone gravel. The hue is 10YR or 7.5YR throughout the profile. The A horizon has a neutral or slightly alkaline reaction. The Bt horizon has a texture of sandy clay loam or clay loam. It is 25 to 35 percent clay, 35 to 50 percent fine sand and coarser sand, and 0 to 15 percent rock fragments. Reaction in this horizon is slightly alkaline or moderately alkaline.

The Bk horizon has a fine-earth texture of sandy clay loam, sandy loam, or loam and is 5 to 50 percent rock fragments. The amount of rock fragments commonly increases with increasing depth. Calcium carbonate equivalent in this horizon is 15 to 30 percent. This horizon has a moderately alkaline or strongly alkaline reaction.

Tisworth Series

The Tisworth series consists of very deep, well drained soils on alluvial fans and terraces. These soils formed in alluvium derived from sodic shale and sandstone. Slope ranges from 0 to 5 percent. Elevation is 6,200 to 6,600 feet. The annual precipitation is 10 to 12 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 90 to 100 days.

Typical pedon of Tisworth sandy loam, 0 to 5 percent slopes, along the Oregon Trail Road in sec. 31, T. 31 N., R. 84 W.

A—0 to 3 inches; light brownish gray (10YR 6/2) sandy loam, grayish brown (10YR 5/2) moist; weak medium platy structure; soft, very friable, nonsticky and nonplastic; many fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Btn1—3 to 9 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 4/3) moist; weak medium prismatic structure parting to moderate medium subangular blocky; hard, firm, slightly sticky and plastic; common fine and medium roots; many distinct clay bridges and few faint clay films on faces of peds; strongly effervescent; disseminated calcium carbonate; very strongly alkaline; clear wavy boundary.

Btn2—9 to 14 inches; pale brown (10YR 6/3) sandy clay loam, dark brown (10YR 4/3) moist; weak medium subangular blocky structure; hard, firm, slightly sticky and plastic; few fine and medium roots; many distinct clay bridges and few thin clay films on faces of peds; strongly effervescent; disseminated calcium carbonate; very strongly alkaline; clear wavy boundary.

Bkn1—14 to 28 inches; pale brown (10YR 6/3) sandy clay loam, brown (10YR 5/3) moist; massive; hard, firm, slightly sticky and slightly plastic; few fine, medium, and coarse roots; violently effervescent; disseminated calcium carbonate; very strongly alkaline; clear wavy boundary.

Bkn2—28 to 60 inches; very pale brown (10YR 7/3) sandy loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; violently effervescent; disseminated calcium carbonate; very strongly alkaline.

The A horizon has a moderately alkaline or strongly alkaline reaction. The Btn horizon has a texture of sandy clay loam or clay loam and is 20 to 30 percent clay. This horizon is more than 15 percent exchangeable sodium. The Bkn horizon has a texture of loam, sandy loam, or sandy clay loam. The calcium carbonate equivalent in this horizon is 3 to 14 percent.

Travson Series

The Travson series consists of very shallow or shallow, somewhat excessively drained soils on ridge crests and dip slopes. These soils formed in residuum derived from sandstone. Slope ranges from 10 to 40 percent. Elevation is 5,600 to 6,400 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 47 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Travson sandy loam in an area of Travson-Rock outcrop complex, 10 to 40 percent slopes, 370 feet north and 1,010 feet east of the southwest corner of sec. 9, T. 34 N., R. 83 W.

A—0 to 3 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; slightly alkaline; clear smooth boundary.

C—3 to 11 inches; light yellowish brown (10YR 6/4) gravelly sandy loam, yellowish brown (10YR 5/4) moist; massive; soft, very friable, slightly sticky and slightly plastic; common fine roots; slightly effervescent; disseminated calcium carbonate; 15 percent angular sandstone gravel; moderately alkaline; abrupt smooth boundary.

R—11 inches; hard sandstone.

The depth to hard sandstone bedrock ranges from 6 to 20 inches. The hue is 10YR or 2.5Y throughout the profile. The A horizon has a slightly alkaline or moderately alkaline reaction. The C horizon has a slightly alkaline to strongly alkaline reaction. This horizon has a fine-earth texture of sandy loam or fine sandy loam. It is 8 to 18 percent clay and is 0 to 30 percent rock fragments. The rock fragments are mainly angular sandstone gravel and channery fragments.

Tullock Series

The Tullock series consists of moderately deep, excessively drained soils on hills. These soils formed in eolian deposits and residuum derived from sandstone. Slope ranges from 6 to 45 percent. Elevation is 5,400 to 6,400 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Tullock loamy sand in an area of Orpha-Tullock-Rock outcrop complex, 6 to 45 percent slopes, 1,320 feet east and 1,500 feet south of the northwest corner of sec. 34, T. 38 N., R. 79 W.

A—0 to 5 inches; light brownish gray (10YR 6/2) loamy sand, dark grayish brown (10YR 4/2) moist; single grain; loose, nonsticky and nonplastic; common fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; gradual smooth boundary.

C—5 to 24 inches; pale brown (10YR 6/3) loamy sand, dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; few fine and coarse roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Cr—24 inches; soft sandstone.

The depth to soft bedrock ranges from 20 to 40 inches. The A horizon has a slightly alkaline or moderately alkaline reaction. The C horizon has a texture of loamy sand or sand.

Typic Fluvaquents

Typic Fluvaquents are very deep and poorly drained. They are on flood plains. These soils formed in alluvium derived from various sources. Slope ranges from 0 to 3 percent. Elevation is 5,800 to 6,700 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 41 to 46 degrees F, and the frost-free period is 100 to 120 days.

Reference pedon of Typic Fluvaquents, 0 to 3 percent slopes, 1,800 feet south and 910 feet west of the northeast corner of sec. 15, T. 30 N., R. 85 W.

Oi—1 inch to 0; slightly decomposed grass fibers.

A—0 to 7 inches; light brownish gray (2.5Y 6/2) loam, dark grayish brown (2.5Y 4/2) moist; moderate fine granular structure; hard, friable, slightly sticky and slightly plastic; many fine roots; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Cg1—7 to 15 inches; light gray (5Y 7/1) loam, gray (5Y 5/1) moist; massive; hard, firm, slightly sticky and slightly plastic; few fine and medium roots; violently effervescent; disseminated calcium carbonate; strongly alkaline; clear wavy boundary.

Cg2—15 to 39 inches; gray (5Y 5/1) loam, dark gray (5Y 4/1) moist; massive; hard, friable, slightly sticky and slightly plastic; few fine and medium roots; violently effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

Cg3—39 to 60 inches; light brownish gray (10YR 6/2) sand, dark grayish brown (2.5Y 4/2) moist; single grain; loose, nonsticky and nonplastic; slightly effervescent; disseminated calcium carbonate; moderately alkaline.

The properties of these soils vary greatly within a short distance. The particle-size control section has an average texture that ranges from sandy loam to clay and an average clay content that ranges from 15 to 50 percent. These soils are slightly saline to strongly saline throughout the profile. The depth to the seasonal high water table is 0 to 1 foot from April through June. The C horizon is gleyed or has prominent mottles within 10 inches of the surface.

Typic Haplaquolls

Typic Haplaquolls are very deep and somewhat poorly drained. They are in swales and drainageways. These soils formed in alluvium derived from various sources. Slope ranges from 0 to 4 percent. Elevation is 6,300 to 7,800 feet. The annual precipitation is 13 to 19 inches, the annual temperature is 37 to 43 degrees F, and the frost-free period is 80 to 110 days.

Reference pedon of Typic Haplaquolls, 0 to 4 percent slopes, 1,220 feet south and 250 feet east of the northwest corner of sec. 33, T. 29 N., R. 81 W.

A1—0 to 8 inches; dark gray (10YR 4/1) silt loam, very dark gray (10YR 3/1) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; slightly effervescent; disseminated calcium carbonate; slightly alkaline; clear smooth boundary.

A2—8 to 14 inches; dark gray (10YR 4/1) silt loam, very dark gray (10YR 3/1) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; slightly effervescent; disseminated calcium carbonate; slightly alkaline; clear smooth boundary.

Cg1—14 to 24 inches; dark gray (5Y 4/1) clay, very dark gray (5Y 3/1) moist; common prominent red (2.5YR 5/6) mottles; massive; very hard, very firm, very sticky and very plastic; common fine roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

Cg2—24 to 34 inches; gray (5Y 5/1) clay, dark gray (5Y 4/1) moist; massive; very hard, very firm, very sticky and very plastic; few fine roots; violently effervescent; disseminated calcium carbonate; moderately alkaline; gradual wavy boundary.

Cg3—34 to 60 inches; dark gray (5Y 4/1) clay, very dark gray (5Y 3/1) moist; massive; very hard, very firm, very sticky and very plastic; slightly alkaline.

The properties of these soils vary greatly within a short distance. The particle-size control section has an average texture that ranges from sandy loam to clay and an average clay content that ranges from 15 to 60 percent. In some pedons sand and gravel is at a depth of 30 to 40 inches. Reaction is neutral to strongly alkaline throughout the profile. The depth to the seasonal high water table is 1 to 2 feet from May through July. The C horizon is gleyed or has prominent mottles above a depth of 24 inches.

Typic Torrifluvents

Typic Torrifluvents are very deep and well drained. They are on flood plains. These soils formed in alluvium derived from various sources. Slope ranges from 0 to 3 percent. Elevation is 5,200 to 6,300 feet. The annual precipitation is 7 to 9 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Reference pedon of Typic Torrifluvents, 0 to 3 percent slopes, 1,770 feet west and 1,990 feet north of the southeast corner of sec. 35, T. 38 N., R. 87 W.

A—0 to 4 inches; light reddish brown (5YR 6/4) very fine sandy loam, reddish brown (5YR 4/4) moist; weak thin platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium roots; slightly effervescent; disseminated calcium carbonate; strongly alkaline; clear smooth boundary.

C—4 to 60 inches; light reddish brown (5YR 6/3) loam stratified with thin layers of very fine sandy loam, fine sandy loam, sandy loam, and silty clay loam, reddish brown (10YR 4/3) moist; hard, firm, sticky and plastic; few coarse roots; violently effervescent; disseminated calcium carbonate; common fine clusters of salt crystals; moderately alkaline.

The properties of these soils vary greatly within short distances. The particle-size control section has an average texture that ranges from sandy loam to silty clay loam and an average clay content that ranges from 10 to 40 percent. Some pedons have sand and gravel below a depth of 20 inches. The hue is 2.5YR to 2.5Y throughout the profile. The soils are moderately saline or strongly saline throughout the profile. Reaction throughout the profile is moderately alkaline to very strongly alkaline.

Uffens Series

The Uffens series consists of very deep, well drained soils on terraces and alluvial fans. These soils formed in alluvium derived from sodic sandstone, siltstone, and shale. Slope ranges from 0 to 6 percent. Elevation is 5,800 to 6,300 feet. The annual precipitation is 7 to 9 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Uffens sandy loam in an area of Effington-Uffens complex, 0 to 6 percent slopes, 1,375 feet north and 3,975 feet east of the southwest corner of sec. 9, T. 37 N., R. 86 W.

E—0 to 2 inches; pale brown (10YR 6/3) sandy loam, olive brown (2.5Y 4/4) moist; weak medium platy structure; slightly hard, very friable, slightly sticky and slightly plastic; common fine and medium and few coarse roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

A—2 to 4 inches; light yellowish brown (2.5Y 6/4) sandy loam, olive brown (2.5Y 4/4) moist; moderate medium granular structure; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium and few coarse roots; slightly effervescent; disseminated calcium carbonate; moderately alkaline; abrupt smooth boundary.

Btn—4 to 12 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 4/3) moist; weak coarse columnar structure parting to weak medium and coarse angular blocky; very hard, friable, slightly sticky and slightly plastic; few medium and coarse roots; many distinct clay bridges and few faint clay films on faces of peds; violently effervescent; disseminated calcium carbonate; very strongly alkaline; clear smooth boundary.

Btkn—12 to 16 inches; light yellowish brown (10YR 6/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; weak medium angular blocky structure; extremely hard, friable, sticky and plastic; few medium and coarse roots; many distinct clay bridges and few faint clay films on faces of peds; violently effervescent; calcium carbonate is disseminated and also occurs as few fine soft masses; very strongly alkaline; gradual wavy boundary.

Bkn—16 to 36 inches; light yellowish brown (10YR 6/4) loam, dark yellowish brown (10YR 4/4) moist; massive; very hard, firm, sticky and plastic; few medium and coarse roots; violently effervescent; calcium carbonate is disseminated and also occurs as common fine masses; very strongly alkaline; gradual wavy boundary.

Bkny—36 to 60 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; massive; hard, firm, sticky and plastic; violently effervescent; calcium carbonate is disseminated and also occurs as common fine and medium soft masses; few medium clusters of gypsum crystals; strongly alkaline.

The E and A horizons have hue of 2.5Y or 10YR. They have a texture of sandy loam or very fine sandy loam. The Btn, Btkn, Bkn, and Bkny horizons have hue of 5Y to 10YR. The Btn and Btkn horizons have textures of loam, clay loam, or sandy clay loam and are 22 to 35 percent clay. The Bt and Btkn horizons are 15 to 30 percent exchangeable sodium. The Bkn and Bkny horizons have strongly alkaline or very strongly alkaline reactions. Some pedons do not have a Bkny horizon.

Ulm Series

The Ulm series consists of very deep, well drained soils on terraces and alluvial fans. These soils formed in alluvium derived from siltstone, sandstone, and shale. Slope ranges from 0 to 6 percent. Elevation is 5,000 to 6,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Ulm clay loam in an area of Forkwood-Ulm complex, 0 to 6 percent slopes, 800 feet west and 150 feet north of the southeast corner of sec. 31, T. 36 N., R. 84 W.

A—0 to 2 inches; grayish brown (2.5Y 5/2) clay loam, dark grayish brown (2.5Y 4/2) moist; moderate very fine granular structure; soft, friable, sticky and plastic; many fine roots; neutral; clear smooth boundary.

Bt1—2 to 9 inches; grayish brown (2.5Y 5/2) clay loam, dark grayish brown (2.5Y 4/2) moist, moderate medium prismatic structure parting to moderate medium angular blocky; very hard, firm, sticky and plastic; common fine and medium roots; many distinct clay films on faces of peds; neutral; gradual smooth boundary.

Bt2—9 to 16 inches; light olive brown (2.5Y 5/4) clay loam, olive brown (2.5Y 4/4) moist; moderate medium prismatic structure parting to moderate medium angular blocky; very hard, firm, sticky and plastic; common fine and medium roots; many distinct clay films on faces of peds; slightly alkaline; gradual smooth boundary.

Bk—16 to 31 inches; light brownish gray (2.5Y 6/2) clay loam, grayish brown (2.5Y 5/2) moist; weak medium angular blocky structure; hard, friable, sticky and plastic; common fine roots; strongly effervescent; calcium carbonate is disseminated and also occurs as common fine threads and seams; moderately alkaline; gradual smooth boundary.

C—31 to 60 inches; grayish brown (2.5Y 5/2) clay loam, grayish brown (2.5Y 5/2) moist; massive; hard, friable, sticky and plastic; slightly effervescent; disseminated calcium carbonate; strongly alkaline.

The content of rock fragments ranges from 0 to 15 percent throughout the profile. The hue is 2.5Y or 10YR throughout the profile. Reaction in the A horizon is neutral or slightly alkaline. The Bt, Bk, and C horizons have textures of clay loam or clay. The Bt horizon is 35 to 50 percent clay and has a neutral to moderately alkaline reaction. Reactions in the Bk and C horizons are moderately alkaline or strongly alkaline. Some pedons do not have a C horizon above a depth of 60 inches.

Ulrant Series

The Ulrant series consists of deep, well drained soils on mountain foot slopes. These soils formed in slopewash alluvium derived dominantly from granite and limestone. Slope ranges from 3 to 15 percent. Elevation is 6,900 to 7,200 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 38 to 40 degrees F, and the frost-free period is 80 to 100 days.

Typical pedon of Ulrant loam, 3 to 15 percent slopes, 2,170 feet south and 250 feet east of the northwest corner of sec. 28, T. 31 N., R. 77 W.

A—0 to 4 inches; dark brown (10YR 3/3) loam, very dark brown (10YR 2/2) moist; moderate fine granular structure; soft, friable, slightly sticky and slightly plastic; many fine roots; 10 percent granite gravel; neutral; clear smooth boundary.

BA—4 to 9 inches; brown (10YR 5/3) loam, dark brown (10YR 3/3) moist; moderate medium angular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; common fine roots; few faint clay films on faces of peds; 10 percent granite gravel; neutral; clear smooth boundary.

Bt1—9 to 17 inches; yellowish brown (10YR 5/4) gravelly clay loam, dark yellowish brown (10YR 4/4) moist; strong medium angular blocky structure; very hard, firm, sticky and plastic; common fine roots; many distinct clay films on faces of peds; 30 percent granite gravel; slightly alkaline; clear smooth boundary.

Bt2—17 to 23 inches; light yellowish brown (10YR 6/4) gravelly clay loam, yellowish brown (10YR 5/4) moist; moderate medium angular blocky structure; very hard, firm, sticky and plastic; common fine roots; many distinct clay films on faces of peds; 30 percent granite gravel; slightly alkaline; clear smooth boundary.

Bk—23 to 54 inches; white (10YR 8/2) gravelly loam, very pale brown (10YR 7/3) moist; massive; hard, friable, slightly sticky and slightly plastic; few fine roots; violently effervescent; majority of fine earth is calcium carbonate; 30 percent granite gravel; strongly alkaline; abrupt smooth boundary.

R—54 inches, hard granite.

The depth to hard granite ranges from 40 to 60 inches. The Bt horizon has a fine-earth texture of loam or clay loam. It is 24 to 35 percent clay and is 20 to 35 percent gravel. Reaction in this horizon is neutral or slightly alkaline. The Bk horizon is 20 to 35 percent gravel. It has a moderately alkaline or strongly alkaline reaction. Calcium carbonate equivalent in this horizon ranges from 40 to 60 percent.

Ustic Torriorthents

Ustic Torriorthents are very shallow to very deep and somewhat excessively drained or well drained. They are on hillsides, canyon sides, escarpments, and hogbacks. These soils formed in residuum and colluvium derived from sedimentary rocks. Slopes range from 30 to 100 percent. Elevation is 5,300 to 7,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 37 to 49 degrees F, and the frost-free period is 90 to 130 days.

Reference pedon of Ustic Torriorthents in an area of Rock outcrop-Ustic Torriorthents, shallow-Rubble land complex, 30 to 100 percent slopes, 1,900 feet north and 1,100 feet west of the southeast corner of sec. 10, T. 40 N., R. 83 W.

A—0 to 1 inch; yellowish brown (10YR 5/4) loam, dark brown (10YR 4/3) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and common medium roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

AC—1 to 4 inches; yellowish brown (10YR 5/4) clay loam, dark yellowish brown (10YR 4/4) moist; weak medium angular blocky structure parting to moderate medium granular; slightly hard, friable, slightly sticky and slightly plastic; common medium roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear wavy boundary.

C—4 to 10 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few fine roots; strongly effervescent; disseminated calcium carbonate; 10 percent angular gravel; moderately alkaline; clear wavy boundary.

Cr—10 inches; soft siltstone interbedded with shale.

The properties of these soils vary greatly within a short distance. The depth to soft bedrock ranges from 4 to 60 inches or more. The fine-earth texture of the particle-size control section ranges from sandy loam to clay. The particle-size control section is 10 to 50 percent clay. The content of rock fragments ranges from 0 to 80 percent throughout the profile. The hue is 2.5Y to 2.5YR throughout the profile. These soils are noneffervescent to violently effervescent throughout the profile. Reaction is neutral to strongly alkaline throughout the profile.

Vonalee Series

The Vonalee series consists of very deep, well drained soils on stable dunes and foot slopes. These soils formed in eolian deposits and alluvium derived dominantly from sandstone. Slope ranges from 3 to 15 percent. Elevation is 5,000 to 6,400 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Vonalee loamy sand in an area of Vonalee-Hiland complex, 3 to 15 percent slopes, NW1/4NE1/4 sec. 31, T. 36 N., R. 84 W.

A—0 to 3 inches; yellowish brown (10YR 5/4) loamy sand, dark yellowish brown (10YR 4/4) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many fine and medium roots; neutral; abrupt smooth boundary.

Bt1—3 to 14 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium prismatic structure parting to moderate coarse subangular blocky; slightly hard, friable, slightly sticky and slightly plastic; common fine and medium roots; many distinct clay bridges on faces of peds; neutral; clear wavy boundary.

Bt2—14 to 19 inches; light yellowish brown (10YR 6/4) sandy loam, yellowish brown (10YR 5/4) moist; moderate medium prismatic structure parting to weak coarse subangular blocky; slightly hard, friable, slightly sticky and nonplastic; common fine and medium roots; many distinct clay bridges on faces of peds; slightly alkaline; clear wavy boundary.

Bw—19 to 32 inches; brownish yellow (10YR 6/6) loamy sand, yellowish brown (10YR 5/6) moist; single grain; loose, nonsticky and nonplastic; few fine roots; moderately alkaline; clear wavy boundary.

Bk—32 to 60 inches; light yellowish brown (2.5Y 6/4) loamy sand, light olive brown (2.5Y 5/4) moist; single grain; loose, nonsticky and nonplastic; few fine roots; strongly effervescent; calcium carbonate is disseminated and also occurs as few irregularly shaped soft masses; strongly alkaline.

The A and Bt horizons have neutral or slightly alkaline reactions. The Bt horizon has hue of 10YR or 7.5YR. The Bw and Bk horizons have hue of 10YR or 2.5Y. The Bt horizon has a dominant texture of sandy loam or fine sandy loam, but in some pedons a thin layer of sandy clay loam is in the upper part of this horizon. This horizon averages 12 to 18 percent clay. The Bw horizon has a texture of sandy loam or loamy sand. Some pedons do not have a Bw horizon. The Bk horizon has a texture of loamy sand, loamy fine sand, or sandy loam. It has a slightly alkaline to strongly alkaline reaction.

Wallson Series

The Wallson series consists of very deep, well drained soils on alluvial fans and foot slopes. These soils formed in slopewash alluvium derived dominantly from sandstone. Slope ranges from 6 to 10 percent. Elevation is 5,800 to 6,200 feet. The annual precipitation is 7 to 9 inches, the annual temperature is 44 to 46 degrees F, and the frost-free period is 110 to 120 days.

Typical pedon of Wallson loamy fine sand in an area of Enos-Wallson association, rolling, NW¹/₄SE¹/₄ sec. 18, T. 37 N., R. 87 W.

A—0 to 2 inches; pale brown (10YR 6/3) loamy fine sand, dark brown (10YR 4/3) moist, weak medium granular structure; soft, very friable, nonsticky and nonplastic; many fine and medium, and common coarse roots; neutral; clear smooth boundary.

Bt1—2 to 7 inches; brown (10YR 5/3) sandy loam, dark brown (10YR 4/3) moist; weak medium prismatic structure parting to weak medium angular blocky; slightly hard, friable, slightly sticky and slightly plastic; many fine and medium and common coarse roots; many distinct clay bridges and few faint clay films on faces of peds; slightly alkaline; clear smooth boundary.

Bt2—7 to 14 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; weak coarse prismatic structure parting to weak coarse angular blocky; slightly hard, friable, slightly sticky and slightly plastic; common fine, medium, and coarse roots; many distinct clay bridges and few faint clay films on faces of peds; slightly alkaline; clear smooth boundary.

Btk—14 to 18 inches; yellowish brown (10YR 5/4) sandy loam, dark yellowish brown (10YR 4/4) moist; weak medium angular blocky structure; soft, very friable, slightly sticky and slightly plastic; few medium and coarse roots; common distinct clay bridges on faces of peds; slightly effervescent; calcium carbonate is disseminated and also occurs as few fine and medium soft masses; moderately alkaline; gradual wavy boundary.

Bk1—18 to 48 inches; light brownish gray (2.5Y 6/2) sandy loam, olive brown (2.5Y 4/4) moist; soft, very friable, slightly sticky and slightly plastic; few medium roots; violently effervescent; calcium carbonate is disseminated and also occurs as many fine, medium, and common coarse soft masses; strongly alkaline; clear smooth boundary.

Bk2—48 to 60 inches; light yellowish brown (2.5Y 6/4) loamy sand, olive brown (2.5Y 4/4) moist; massive; soft, very friable, nonsticky and nonplastic; few medium roots; violently effervescent; calcium carbonate is disseminated and also occurs as few fine soft masses; strongly alkaline.

The A horizon has a neutral or slightly alkaline reaction. The Bt horizon has a texture of sandy loam or fine sandy loam and is 10 to 18 percent clay. It has a slightly alkaline or moderately alkaline reaction. The Bk horizon has a texture of sandy loam, fine sandy loam, or loamy sand. It has a moderately alkaline or strongly alkaline reaction.

Whiteriver Series

The Whiteriver series consists of very deep, well drained soils on plateaus. These soils formed in alluvium or eolian deposits overlying material derived from tuffaceous siltstone. Slope ranges from 0 to 6 percent. Elevation is 6,400 to 7,600 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 37 to 42 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Whiteriver loam, 0 to 6 percent slopes, 100 feet north and 500 feet east of the southwest corner of sec. 36, T. 29 N., R 82 W.

A1—0 to 2 inches; dark brown (10YR 4/3) loam, dark brown (10YR 3/3) moist; strong very fine granular structure; soft, very friable, nonsticky and slightly plastic; many very fine roots; neutral; clear smooth boundary.

A2—2 to 5 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; moderate medium granular structure; soft, very friable, slightly sticky and slightly plastic; common very fine roots; neutral; clear smooth boundary.

Bt1—5 to 8 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to moderate medium angular blocky; slightly hard, friable, slightly sticky and plastic;

common very fine roots; common distinct clay films on faces of peds; neutral; clear smooth boundary.

Bt2—8 to 19 inches; pale brown (10YR 6/3) clay loam, dark brown (10YR 4/3) moist; moderate coarse prismatic structure parting to strong medium angular blocky; hard, firm, sticky and very plastic; many prominent clay films on faces of peds; neutral; clear smooth boundary.

Btk—19 to 23 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; hard, firm, sticky and plastic; common distinct clay films on faces of peds; strongly effervescent; calcium carbonate is disseminated and also occurs as few distinct coatings on faces of peds; moderately alkaline; gradual irregular boundary.

Bk—23 to 60 inches; light gray (10YR 7/2) clay loam, light brownish gray (10YR 6/2) moist; massive; hard, firm, sticky and plastic; strongly effervescent; calcium carbonate is disseminated and also occurs as few medium seams and soft round masses; common silt- and sand-sized glass shards; moderately alkaline.

The content of rock fragments throughout the profile is commonly less than 5 percent, but parts of some pedons have as much as 15 percent rock fragments. The Bt horizon has a texture of clay loam or clay. It averages 35 to 45 percent clay and has 15 to 35 percent fine sand and coarser sand. This horizon has a neutral or slightly alkaline reaction. The 2Bk or 2C horizon has hue of 10YR or 2.5Y. This horizon is tuffaceous material and has a texture of clay loam or loam. It is 23 to 35 percent clay and is less than 15 percent fine sand and coarser sand.

Woosley Series

The Woosley series consists of moderately deep, well drained soils on foot slopes. These soils formed in slopewash alluvium and residuum derived from limestone. Slope ranges from 2 to 15 percent. Elevation is 7,000 to 8,200 feet. The annual precipitation is 15 to 19 inches, the annual temperature is 34 to 37 degrees F, and the frost-free period is less than 90 days. Frost is common in the summer months.

Typical pedon of Woosley loam in an area of Decross-Woosley association, sloping, 2,050 feet north and 680 feet west of the southeast corner of sec. 1, T. 40 N., R. 86 W.

A—0 to 6 inches; dark brown (10YR 4/3) loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; neutral; clear wavy boundary.

Bt1—6 to 12 inches; dark brown (10YR 4/3) clay loam, very grayish brown (10YR 3/2) moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky and slightly plastic; many medium and fine roots; common distinct clay films on faces of peds; neutral; clear wavy boundary.

Bt2—12 to 17 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; hard, friable, sticky and plastic; common medium and fine, and few coarse roots; many distinct clay films on faces of peds; slightly alkaline; clear wavy boundary.

Bk—17 to 23 inches; pale brown (10YR 6/3) gravelly clay loam, brown (10YR 5/3) moist; weak medium subangular blocky structure; hard, friable, slightly sticky and slightly plastic; few coarse roots; strongly effervescent; calcium carbonate is disseminated and also occurs as coatings on rock fragments; 25 percent angular limestone gravel; moderately alkaline; abrupt wavy boundary.

R—23 inches; hard fractured limestone.

The depth to bedrock ranges from 20 to 40 inches. The A horizon has a neutral or slightly alkaline reaction. The Bt horizon is 28 to 35 percent clay and is 0 to 15 percent rock fragments. The Bk horizon has a fine-earth texture of clay loam or loam and is 10 to 35 percent rock fragments. Rock fragments in the B horizons are mainly angular limestone gravel.

Worf Series

The Worf series consists of very shallow or shallow, well drained soils on dip slopes and hills. These soils formed in slopewash alluvium and residuum derived from sandstone. Slope ranges from 3 to 15 percent. Elevation is 5,000 to 5,500 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 46 to 49 degrees F, and the frost-free period is 120 to 130 days.

Typical pedon of Worf loam in an area of Worf-Briggsdale loams, 3 to 15 percent slopes, 380 feet west and 800 feet south of the northeast corner of sec. 32, T. 41 N., R. 80 W.

A—0 to 2 inches; brown (10YR 5/3) loam, dark brown (10YR 4/3) moist; weak very fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine and common medium roots; slightly alkaline; clear smooth boundary.

Bt1—2 to 4 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and few medium roots; common distinct clay films on faces of peds; slightly alkaline; clear smooth boundary.

Bt2—4 to 10 inches; brown (10YR 5/3) clay loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to strong medium and coarse subangular blocky; hard, firm, sticky and plastic; common fine and few medium roots; many distinct and few prominent clay films on faces of peds; moderately alkaline; clear wavy boundary.

Btk—10 to 13 inches; pale brown (10YR 6/3) clay loam, brown (10YR 5/3) moist; moderate medium subangular blocky structure; slightly hard, friable, sticky and plastic; common fine and few medium roots; common distinct clay films on faces of peds; strongly effervescent; disseminated calcium carbonate; strongly alkaline; abrupt wavy boundary.

Cr—13 inches; soft sandstone.

The depth to soft bedrock ranges from 8 to 20 inches. The Bt horizon has a dominant texture of loam, sandy clay loam, or clay loam, but in some pedons, a small part of this horizon has a texture of sandy loam. This horizon averages 18 to 35 percent clay. It has a slightly alkaline or moderately alkaline reaction. Some pedons have a Bk horizon. It has hue of 10YR or 2.5Y and a texture of loam or fine sandy loam. Reaction in the Bk horizon is moderately alkaline or strongly alkaline.

Worf Variant

The Worf Variant consists of shallow, well drained soils on hill crests. These soils formed in residuum derived from sandstone and shale. Slope ranges from 5 to 20 percent. Elevation is 5,800 to 6,200 feet. The annual precipitation is 15 to 17 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Worf Variant fine sandy loam in an area of Worf Variant-Cushman Variant-Peyton association, rolling, 1,270 feet north and 1,500 feet west of the southeast corner of sec. 9, T. 40 N., R. 77 W.

A—0 to 4 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; 10 percent ironstone channery fragments; neutral; abrupt smooth boundary.

AB—4 to 8 inches; brown (10YR 5/3) fine sandy loam, dark brown (10YR 3/3) moist; moderate medium prismatic structure parting to moderate medium angular blocky; hard, friable, slightly sticky and slightly plastic; common fine roots; 10 percent ironstone channery fragments; neutral; clear smooth boundary.

Bt1—8 to 15 inches; brown (7.5YR 5/4) sandy clay loam, dark brown (7.5YR 4/4) moist; strong medium angular blocky structure; extremely hard, firm, slightly sticky and plastic; common fine roots; many distinct clay films on faces of peds; 10 percent ironstone channery fragments; neutral; clear smooth boundary.

Bt2—15 to 17 inches; light brown (7.5YR 6/4) sandy clay loam, dark brown (7.5YR 4/4) moist; moderate medium angular blocky structure; very hard, firm, slightly sticky and plastic; common fine roots; many distinct clay bridges on faces of peds; 10 percent ironstone channery fragments; neutral.

Cr—17 inches; soft sandstone interbedded with shale.

The depth to bedrock ranges from 10 to 20 inches. The content of rock fragments throughout the profile ranges from 5 to 15 percent. The rock fragments are mainly sandstone and ironstone channery fragments. The Bt horizon has hue of 10YR or 7.5YR. It has a texture of sandy clay loam or clay loam and is 20 to 30 percent clay.

Worfman Series

The Worfman series consists of shallow, well drained soils on ridge crests, dip slopes, and hills. These soils formed in residuum and slopewash alluvium derived from sandstone, siltstone, and shale. Slope ranges from 6 to 30 percent. Elevation is 5,900 to 7,400 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 39 to 43 degrees F, and the frost-free period is 90 to 110 days.

Typical pedon of Worfman loam in an area of Blazon-Cragosen-Worfman association, hilly, 1,050 feet north and 900 feet east of the southwest corner of sec. 30, T. 39 N., R. 88 W.

A—0 to 2 inches; grayish brown (10YR 5/2) loam, very dark grayish brown (10YR 3/2) moist; weak coarse granular structure; soft, friable, slightly sticky and slightly plastic; many fine and medium and few coarse roots; slightly alkaline; clear smooth boundary.

Bt—2 to 6 inches; brown (10YR 5/3) sandy clay loam, dark brown (10YR 4/3) moist; weak medium prismatic structure parting to weak medium subangular blocky; slightly hard, firm, sticky and plastic; many fine and medium and few coarse roots; common faint clay films and many distinct clay bridges on faces of peds; 10 percent sandstone channery fragments; slightly alkaline; clear smooth boundary.

Btk—6 to 12 inches; yellowish brown (10YR 5/4) sandy clay loam, dark yellowish brown (10YR 4/4) moist; moderate medium and coarse angular blocky structure; hard, firm, sticky and plastic; few fine and medium and few coarse roots; few faint clay films and many distinct clay bridges on faces of peds; violently effervescent; calcium carbonate is disseminated and also occurs as common fine threads and as coatings on rock fragments; 10 percent sandstone channery fragments; moderately alkaline; gradual wavy boundary.

Bk—12 to 17 inches; yellowish brown (10YR 5/6) sandy clay loam, dark yellowish brown (10YR 4/6) moist; massive; slightly hard, friable, slightly sticky and slightly plastic; few coarse roots; violently effervescent; calcium carbonate is disseminated and also occurs as common fine seams and soft masses; strongly alkaline; clear smooth boundary.

Cr—17 inches; soft sandy shale.

The depth to soft bedrock ranges from 10 to 20 inches. The content of rock fragments throughout the profile ranges from 0 to 15 percent. They are mainly channery fragments. The A and Bt horizons have neutral or slightly alkaline reactions. The Bt horizon has a texture of sandy clay loam or clay loam and is 20 to 34 percent clay. The Bk horizon has a texture of loam, sandy clay loam, or clay loam. This horizon has a moderately alkaline or strongly alkaline reaction.

Worfstone Series

The Worfstone series consists of shallow, well drained soils on terrace breaks and hill crests. These soils formed in residuum derived from conglomerate. Slope ranges from 2 to 50 percent. Elevation is 6,400 to 7,000 feet. The annual precipitation is 10 to 12 inches, the annual temperature is 41 to 42 degrees F and the frost-free period is 90 to 110 days.

Typical pedon of Worfstone sandy loam in an area of Worfstone-McFadden-Lupinto complex, 6 to 50 percent slopes, 2,390 feet south and 1,640 feet west of the northeast corner of sec. 2, T. 31 N., R. 89 W.

A—0 to 2 inches; pale brown (10YR 6/3) sandy loam, dark brown (10YR 3/3) moist; weak fine granular structure; soft, very friable, nonsticky and nonplastic; many fine roots; slightly alkaline; clear wavy boundary.

Bt—2 to 6 inches; yellowish brown (10YR 5/4) very gravelly sandy clay loam, dark yellowish brown (10YR 3/4) moist; weak coarse subangular blocky structure; slightly hard, friable, sticky and plastic; many fine roots; common distinct clay bridges on faces of peds; 40 percent gravel; slightly alkaline; clear wavy boundary.

Bk1—6 to 11 inches; pale brown (10YR 6/3) extremely gravelly sandy loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, nonsticky and nonplastic; many fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as common threads, soft masses, and as coatings on gravel; 70 percent gravel; moderately alkaline; clear wavy boundary.

Bk2—11 to 17 inches; very pale brown (10YR 7/3) extremely gravelly sandy loam, pale brown (10YR 6/3) moist; massive; hard, friable, nonsticky and nonplastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as coatings on gravel; 80 percent gravel; moderately alkaline; abrupt smooth boundary.

R—17 inches; hard conglomerate.

The depth to hard bedrock ranges from 10 to 20 inches. The A horizon has a neutral or slightly alkaline reaction. Reaction in the Bt horizon is slightly alkaline or moderately alkaline. The Bt horizon is 20 to 30 percent clay and averages 35 to 60 percent rock fragments. In some pedons the upper part of this horizon has less than 35 percent rock fragments and the lower part has more than 60 percent rock fragments. The Bk horizon is 65 to 80 percent rock fragments and 10 to 20 percent clay. It has a moderately alkaline to strongly alkaline reaction. Rock fragments in the B horizons are mainly gravel.

Zeomont Series

The Zeomont series consists of very deep, excessively drained soils on stable dunes. These soils formed in eolian deposits derived dominantly from sandstone. Slope ranges from 6 to 15 percent. Elevation is 5,900 to 6,200 feet. The annual precipitation is 10 to 14 inches, the annual temperature is 40 to 43 degrees F, and the frost-free period is 100 to 110 days.

Typical pedon of Zeomont loamy sand in an area of Zeomont-Ryan Park loamy sands, 5 to 15 percent slopes, 1/2 mile south of highway 220, east side of sec. 21, T. 30 N., R. 84 W.

A—0 to 5 inches; grayish brown (10YR 5/2) loamy sand, dark grayish brown (10YR 4/2) moist; single grain; loose, nonsticky and nonplastic; many fine and medium roots; slightly alkaline; clear smooth boundary.

AC—5 to 12 inches; brown (10YR 5/3) loamy sand, dark brown (10YR 4/3) moist; single grain; loose, nonsticky and nonplastic; many fine and medium roots; slightly alkaline; clear smooth boundary.

C1—12 to 27 inches; pale brown (10YR 6/3) sand, brown (10YR 5/3) moist; single grain; loose, nonsticky and nonplastic; common medium roots; slightly alkaline; gradual wavy boundary.

C2—27 to 60 inches; light gray (2.5Y 7/2) sand, grayish brown (2.5Y 5/2) moist; single grain; loose, nonsticky and nonplastic; few medium roots; slightly alkaline.

The C horizon has hue of 2.5Y or 10YR. It has a texture of loamy sand or sand. Some pedons are slightly effervescent below a depth of 40 inches.

Zigweid Series

The Zigweid series consists of very deep, well drained soils on foot slopes, alluvial fans, terraces, and plateaus. These soils formed in alluvium derived from various sources. Slope ranges from 2 to 15 percent. Elevation is 5,000 to 6,600 feet. The annual precipitation is 9 to 14 inches, the annual temperature is 44 to 49 degrees F, and the frost-free period is 110 to 130 days.

Typical pedon of Zigweid loam, 2 to 9 percent slopes, SE1/4NW1/4SE1/4 sec. 23, T. 38 N., R. 80 W.

A—0 to 3 inches; grayish brown (2.5Y 5/2) loam, dark grayish brown (2.5Y 4/2) moist; moderate fine granular structure; soft, very friable, slightly sticky and slightly plastic; many fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; clear smooth boundary.

Bw—3 to 14 inches; pale brown (10YR 6/3) loam, dark brown (10YR 4/3) moist; moderate medium prismatic structure parting to weak medium subangular blocky; hard, friable, slightly sticky and slightly plastic; common fine roots; strongly effervescent; disseminated calcium carbonate; moderately alkaline; gradual smooth boundary.

Bk—14 to 34 inches; light gray (10YR 7/2) loam, grayish brown (10YR 5/2) moist; massive; hard, friable, slightly sticky and slightly plastic; few fine roots; violently effervescent; calcium carbonate is disseminated and also occurs as few medium threads and seams; strongly alkaline; gradual smooth boundary.

C—34 to 60 inches; pale brown (10YR 6/3) loam, brown (10YR 5/3) moist; massive; slightly hard, very friable, slightly sticky and slightly plastic; strongly effervescent; disseminated calcium carbonate; strongly alkaline.

The particle-size control section is 20 to 35 percent clay. The hue is 2.5Y or 10YR throughout the profile. Texture throughout the profile is loam or clay loam. Reaction in the A horizon is slightly alkaline or moderately alkaline. Reactions in the Bk and C horizons are moderately alkaline or strongly alkaline. The Bk horizon has a calcium carbonate equivalent of 5 to 12 percent. Some pedons have a slight accumulation of gypsum in the Bk horizon. Some pedons do not have a C horizon above a depth of 60 inches.

The Zigweid soils in map unit 235 are outside the characteristics of the Zigweid series because they have a water table. The depth to the seasonal high water table is 1.5 to 3 feet from May through September. In these soils, the electrical conductivity is 2 to 8 millimhos per centimeter in the A horizon and 4 to 8 millimhos per centimeter in the B and C horizons. The content of gypsum is 5 to 10 percent in the B horizon and 2 to 5 percent in the C horizon.

Formation of the Soils

Soil is the collection of natural bodies on the earth's surface containing living matter and capable of supporting plants (U.S. Dep. Agric., 1975). It is a mixture of minerals, organic matter, water, and air occurring in various amounts. Soil properties change vertically, as well as horizontally. Soils are characterized by their sequence of layers, or horizons, which are roughly parallel to the soil surface. Horizons vary in color, texture, chemistry, structure, and other properties. They are continually forming and changing in response to environmental forces, which are also continually changing. These changes occur slowly over long periods of time. These forces, or soil-forming factors, are parent material, climate, living organisms, relief or topography, and time (Jenny, 1941). These dynamic forces have acted and continue to act to form present-day soils. Individual soils are as diverse as the combination of factors which formed them.

Parent Material

Parent material is a dominant factor in the formation of many of the soils in the Natrona County Area. The principal properties which distinguish many of the soil series are directly related to the parent material. The distribution of most of the parent materials in the county is a reflection of geologic formation outcrop patterns, which in turn are controlled by geologic structure. Outcrop patterns are largely the result of mountain building and subsequent erosional processes, as well as the result of the distribution of younger, overlapping deposits.

In the survey area, granite, gneiss, and schist are the core of the mountain areas and the Sweetwater Rocks in the southwestern part of the area. The Irson, Kezar, Grimstone, and Cabin series are examples of soils formed in residuum, colluvium, or slopewash alluvium derived dominantly from these bedrocks. These soils are noncalcareous and very low in soluble salts.

Limestone and hard calcareous sandstone occur on the flanks of the mountain areas. The Starley, Farlow, Nathrop, and Woosley series are examples of soils formed in residuum, colluvium, or slopewash alluvium derived dominantly from these bedrocks. These soils are medium textured, are either calcareous throughout or have horizons of calcium carbonate accumulation, and contain only small amounts of the more soluble salts.

Flanking the limestone and sandstone formations are red beds consisting of mainly siltstone and fine grained sandstone. The Roughlock, Fiveoh, Redbow, and Redspear series are examples of soils formed in residuum or slopewash alluvium derived dominantly from these bedrocks. These soils are moderately coarse textured or medium textured and contain high amounts of calcium carbonate and gypsum. They tend to be highly erosive because of high percentages of silt and very fine sand.

Flanking the red bed formations are gray, hard, platy, and black soft shales which are mainly noncalcareous and low in soluble salts. Scattered pockets of bentonite occur throughout the formation. The Kather, Middlewood, Neldore, and Delplain series are examples of soils formed in residuum or slopewash alluvium derived dominantly from these bedrocks. These soils are fine textured.

The basin areas of the county are dominated by soft shales which are strongly salt, alkali, carbonate, and gypsum affected. Occasional pockets of bentonite also occur in this formation. The Amodac, Lolite, Chipendale, and Petrie series are examples of soils formed in residuum or slopewash alluvium derived dominantly from these bedrocks. These soils are medium textured or fine textured.

The soils on plateaus and high terraces commonly developed in layered alluvial deposits and have two distinctly different parent materials within a single profile. The Bosler, Whiteriver, Bateson, and Emblem series are examples of soils formed in these parent materials.

The soils on pediments below steep mountain fronts commonly developed in alluvium from runoff which carried large percentages of rock fragments. The Curecanti, Crago, Ulrant, and Copeman series are examples of soils formed in these parent materials.

Sandy eolian deposits are scattered across the central part of the survey area. The coarse textured Orpha series formed in these parent materials.

The most recent deposits in the county are dominantly on the flood plains of drainageways, streams, and rivers. The Draknab, Haverdad, and Havermom series are examples of soils formed in thinly stratified alluvium.

Climate

Climate has had a large affect on the formation of soils in the area. The main components of climate are precipitation, temperature, humidity, wind, and sunshine.

Precipitation promotes leaching and physical, chemical, and biological activity. The Bachus, Clayburn, and Badwater series, among others, formed in mountain areas which have an annual precipitation of more than 15 inches. These soils have thick, dark colored, organic-rich surface layers and very few soluble salts.

The Griffy, Uffens, and Greybull series, among others, formed in areas which have an annual precipitation of 7 to 9 inches. These soils have thin, light colored surface layers which are low in content of organic matter, and they have higher amounts of soluble salts than the soils in mountain areas.

Temperature weathers exposed bedrock by expansion, contraction, and frost action. It also has an indirect effect on soil formation by determining the length of the growing season. Humidity and wind affect plant growth and the length of time moisture remains in the soils. Wind is also an important factor in transporting and sorting parent material. Sunshine is needed for plant growth and warming the soil surface.

A detailed description of the climate of the survey area is in the section "General Nature of the Survey Area."

Living Organisms

Living organisms, consisting of plant and animal life (including human life), are important factors in the process of soil formation. Initially, the biological community is essential in changing rock material into soils.

The first stage of soil formation is the addition of organic matter. The thick, dark surface layer of the Bachus, Clayburn, and Badwater series, among others, indicates that large amounts of organic matter are decomposing and being incorporated into the soils. Soils such as the Grimstone, Alflack, and Foxton series have overstories of conifers and very sparse understories. These soils have light colored surface layers. They lack a thick fibrous root system in the surface layer, so large amounts of organic matter are not incorporated into the soils. Forest litter, including pine needles, falls on top of these soils and is not directly incorporated.

Animals living in the soils play a major role in incorporating organic matter, as well as providing pores in which air and water can move through the soils. The majority of Aridisols and many Entisols in the Natrona County Area have very little if any earthworm activity (unless irrigated) because of the long periods these soils are dry. Micro-organisms play a critical role in breaking down organic matter and returning nutrients back to the soils, making them available for plant growth.

In most areas where human activities, including cultivation, irrigation, and applications of fertilizer, have affected the survey area. The productivity of the soils has increased several fold; however, in some areas, poor irrigation water management has caused large amounts of salts to accumulate in the soil profile, severely limiting plant growth. The wet phase of the Petrie series is an example. Many irrigated areas of this soil have been abandoned and allowed to return back to native vegetation. In extreme situations, salt flats were created where the soil productivity was completely degraded by a high water table, alkalinity, and salinity.

Topography

Relief, or topography, also plays a major role in soil formation. Soils on convex or steeper slopes have a higher runoff potential and evaporation potential than the soils on concave or gentler slopes. In the Vonalee-Hiland complex, 3 to 15 percent slopes, the Vonalee soils, which have a sandy loam subsoil, formed on convex slopes of 6 to 15 percent. The Hiland soils have a sandy clay loam subsoil and formed on concave slopes of 3 to 6 percent which receive runoff and snow in the form of drifts. The movement of additional water through the Hiland soils has caused larger amounts of clay to accumulate in the subsoil. Soils on steep slopes frequently have rates of erosion which are nearly equal to the rate of soil formation. The Shingle, Taluce, and Chipenhill series are examples of shallow soils with minimal soil development caused by their erodibility.

Time

The length of time needed for the development of various soil features is dependent on many factors. The amount of time that the parent material has been subjected to the processes of soil development determines, to a large degree, the amount and kind of horizon differentiation in a soil. Many of the soils in the area are thousands of years old, whereas soils on flood plains, in slip areas, and in highly erosive areas may be less than a thousand years old.

The details of the present landscape in the Natrona County Area have evolved by continued erosion and local deposition since the late Pliocene, about 2.5 million years ago. Climatic conditions have been relatively stable since the early Holocene, about 10,000 years ago. The Briggsdale series, which is on stable sandstone dip slopes, shows a high degree of soil development, and is one of the oldest soils in the survey area. It has a moderately coarse textured or medium textured surface layer with an abrupt boundary to a fine textured, strongly developed subsoil. The Zigweid series, which formed in slopewash alluvium deposited mainly in the last 1,000 years, is medium textured throughout, with a subsoil that has moderate structural and color development. The Clarkelen series formed in stratified flood plain alluvium, which is a relatively recent deposit. Because of the recent deposition, the soils of this series have not had sufficient time to form subsoils.

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Glossary

Aeration, soil. The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil. Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial fan. The fanlike deposit of a stream where it issues from a gorge upon a plain or of a tributary stream near or at its junction with its main stream.

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Animal unit month (AUM). The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Area reclaim (in tables). An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low	0 to 3.5
Low	3.5 to 5.0
Moderate	5.0 to 7.5
High	more than 7.5

Back slope. The geomorphic component that forms the steepest inclined surface and principal element of many hillsides. Back slopes in profile are commonly steep, are linear, and may or may not include cliff segments.

Badland. Steep or very steep, commonly nonstony, barren land dissected by many intermittent drainage channels. Badland is most common in semiarid and arid regions where streams are entrenched in soft geologic material. Local relief generally ranges from 25 to 500 feet. Runoff potential is very high, and geologic erosion is active.

Basal area. The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation. The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation exchange capacity.

Bedding planes. Fine strata, less than 5 millimeters thick, in unconsolidated alluvial, eolian, lacustrine, or marine sediment.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bentonite. A soft, plastic, porous, light-colored rock composed of the clay mineral montmorillinite and produced by the decomposition of volcanic ash. Bentonite has the ability to absorb large quantities of water and to swell accordingly.

Blowout. A shallow depression from which all or most of the soil material has been removed by the wind. A blowout has a flat or irregular floor formed by a resistant layer or by an accumulation of pebbles or cobbles. In some blowouts the water table is exposed.

Bottom land. The normal flood plain of a stream, subject to flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks. The steep and very steep broken land at the border of an upland summit that is dissected by ravines.

Breast height. An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management. Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte. An isolated small mountain or hill with steep or precipitous sides and a top variously flat, rounded, or pointed that may be a residual mass isolated by erosion or an exposed volcanic neck.

Cable yarding. A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil. A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Canopy. The leafy crown of trees or shrubs. (See Crown.)

Canyon. A long, deep, narrow, very steep sided valley with high, precipitous walls in an area of high local relief.

Capillary water. Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena. A sequence, or "chain," of soils on a landscape that formed in similar kinds of parent material but have different characteristics as a result of differences in relief and drainage.

Cation. An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity. The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps. Very small, irregular terraces on steep hillsides, especially in pasture, formed by the trampling of cattle or the slippage of saturated soil.

Channery soil material. Soil material that is, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment. Control of unwanted vegetation through the use of chemicals.

Chiseling. Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Climax plant community. The plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse fragments. Mineral or rock particles larger than 2 millimeters in diameter.

Coarse textured soil. Sand or loamy sand.

Cobble (or cobblestone). A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material. Material that is 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material is 35 to 60 percent of these rock fragments, and extremely cobbly soil material is more than 60 percent.

Colluvium. Soil material or rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Complex slope. Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil. A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Compressible (in tables). Excessive decrease in volume of soft soil under load.

Conglomerate. A coarse grained, clastic rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system. Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green-manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are:

Loose.—Noncoherent when dry or moist; does not hold together in a mass.

Friable.—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.—Readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.—Adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.—When dry, breaks into powder or individual grains under very slight pressure.

Contour stripcropping (or contour farming). Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coppice dune. A small dune of fine grained soil material stabilized around shrubs or small trees.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Critical area planting. Planting vegetation, such as trees, shrubs, grasses, or legumes, on highly erodible or critically eroding soils.

Cropping system. Growing crops according to a planned system of rotation and management practices.

Crop residue management. Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cross-slope farming. Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown. The upper part of a tree or shrub, including the living branches and their foliage.

Crystalline Rock. An inexact but convenient term designating an igneous or metamorphic rock, as opposed to a sedimentary rock.

Cuesta. An asymmetric, homoclinal ridge capped by resistant rock layers of slight or moderate dip.

Culmination of the mean annual increment (CMAI). The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age, the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave (in tables). The walls of excavations tend to cave in or slough.

Decreasers. The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing. Postponing grazing or resting grazing for a prescribed period.

Depth to rock (in tables). Bedrock is too near the surface for the specified use.

Desert pavement. On a desert surface, a layer of gravel or larger fragments that was emplaced by upward movement of the underlying sediment or that remains after finer particles have been removed by running water or the wind.

Dip slope. A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace). A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming. A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.—These soils have very high and high hydraulic conductivity and a low water-holding capacity. They are not suited to crop production unless irrigated.

Somewhat excessively drained.—These soils have high hydraulic conductivity and a low water-holding capacity. Without irrigation, only a narrow range of crops can be grown and yields are low.

Well drained.—These soils have an intermediate water- holding capacity. They retain optimum amounts of moisture, but they are not wet close enough to the surface or long enough during the growing season to adversely affect yields.

Moderately well drained.—These soils are wet close enough to the surface or long enough that planting or harvesting operations or yields of some field crops are adversely affected unless a drainage system is installed. Moderately well drained soils commonly have a layer with low hydraulic conductivity, a wet layer relatively high in the profile, additions of water by seepage, or some combination of these.

Somewhat poorly drained.—These soils are wet close enough to the surface or long enough that planting or harvesting operations or crop growth is markedly restricted unless a drainage system is installed. Somewhat poorly drained soils commonly have a layer with low hydraulic conductivity, a wet layer high in the profile, additions of water through seepage, or a combination of these.

Poorly drained.—These soils commonly are so wet at or near the surface during a considerable part of the year that field crops cannot be grown under natural conditions. Poorly drained conditions are caused by a saturated zone, a layer with low hydraulic conductivity, seepage, or a combination of these.

Very poorly drained.—These soils are wet to the surface most of the time. The wetness prevents the growth of important crops (except for rice) unless a drainage system is installed.

Drainage, surface. Runoff, or surface flow of water, from an area.

Draw. A small stream valley that generally is more open and has broader bottom land than a ravine or gulch.

Duff. A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Eluviation. The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Eolian soil material. Earthy parent material accumulated through wind action; commonly refers to sandy material in dunes or to loess in blankets on the surface.

Ephemeral stream. A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Erosion. The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic).—Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated).—Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion pavement. A layer of gravel or stones that remains on the surface after fine particles are removed by sheet or rill erosion.

Escarpment. A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Synonym: scarp.

Excess alkali (in tables). Excess exchangeable sodium in the soil. The resulting poor physical properties restrict the growth of plants.

Excess fines (in tables). Excess silt and clay in the soil. The soil does not provide a source of gravel or sand for construction purposes.

Excess lime (in tables). Excess carbonates in the soil that restrict the growth of some plants.

Excess salts (in tables). Excess water-soluble salts in the soil that restrict the growth of most plants.

Exfoliation Dome. A large dome-shaped landform, developed in massive homogeneous coarse grained rocks, especially granite, by exfoliation. Exfoliation is the process by which concentric sheets or flakes of rock are broken loose from the outer surface of a rock mass, commonly by the action of physical or chemical forces.

Extrusive rock. Igneous rock derived from deep-seated molten matter (magma) emplaced on the earth's surface.

Fallow. Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown. The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan terrace. A relict alluvial fan, no longer a site of active deposition, incised by younger and lower alluvial surfaces.

Fast intake (in tables). The rapid movement of water into the soil.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity.*

Fill slope. A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine earth. The particles of the soil that are smaller than 2 millimeters in diameter, or the sand, silt, and clay portions of the soil. (See Texture, soil).

Fine textured soil. Sandy clay, silty clay, or clay.

Firebreak. Area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flaggy soil material. Material that is, by volume, 15 to 35 percent flagstones. Very flaggy soil material is 35 to 60 percent flagstones, and extremely flaggy soil material is more than 60 percent flagstones.

Flagstone. A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Fluvial. Of or pertaining to rivers; produced by river action, as a fluvial plain.

Foothill. A steeply sloping upland that has relief of as much as 1,000 feet (300 meters) and fringes a mountain range or high-plateau escarpment.

Foot slope. The inclined surface at the base of a hill.

Forb. Any herbaceous plant not a grass or a sedge.

Forest cover. All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type. A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Formation, geologic. A fundamental stratigraphic unit of the local classification of rocks consisting of a succession of strata useful for mapping or description.

Fragile (in tables). A soil that is easily damaged by use or disturbance.

Frost action (in tables). Freezing and thawing of soil moisture. Frost action can damage roads, buildings and other structures, and plant roots.

Genesis, soil. The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gleyed soil. Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors and mottles.

Graded stripcropping. Growing crops in strips that grade toward a protected waterway.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material that is 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Green-manure crop (agronomy). A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water (geology). Water filling all the unblocked pores of the material below the water table.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock. Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Head out. To form a flower head.

High-residue crops. Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill. A natural elevation of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well-defined outline; hillsides generally have slopes of more than 15 percent. The distinction between a hill and a mountain is arbitrary and is dependent on local usage.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the "Soil Survey Manual." The major horizons of mineral soil are as follows:

O horizon.—An organic layer of fresh and decaying plant residue.

A horizon.—The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon.—The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon.—The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon.—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon.—Soft, consolidated bedrock beneath the soil.

R layer.—Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

Humus. The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil that is bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff. Soils are assigned to four groups. In group A, soils have a high infiltration rate when thoroughly wet and have a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, soils have a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permanent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Igneous rock. Rock formed by solidification from a molten or partially molten state. Major varieties include plutonic and volcanic rock. Examples are andesite, basalt, and granite.

Illuviation. The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil. A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers. Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration. The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity. The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate. The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate. The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Less than 0.2	very low
0.2 to 0.4	low
0.4 to 0.75	moderately low
0.75 to 1.25	moderate
1.25 to 1.75	moderately high
1.75 to 2.0	high
More than 2.0	very high

Intermittent stream. A stream, or reach of a stream, that flows for prolonged periods only when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders. On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Irrigation. Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin.—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border.—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes or borders.

Controlled flooding.—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation.—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle).—Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow.—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler.—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation.—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding.—Water, released at high points, is allowed to flow onto an area without controlled distribution.

Knoll. A small, low, rounded hill rising above adjacent landforms.

Lacustrine deposit (geology). Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Landslide. The rapid downhill movement of a mass of soil and loose rock, generally when wet or saturated. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones (in tables). Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Leaching. The removal of soluble material from soil or other material by percolating water.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess. Fine grained material, dominantly of silt-sized particles, deposited by the wind.

Low-residue crops. Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Low strength. The soil is not strong enough to support loads.

Mechanical treatment. Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Mesa. A broad, nearly flat topped and commonly isolated upland mass characterized by summit widths that are more than the heights of bounding erosional scarps.

Metamorphic rock. Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement. Nearly all such rocks are crystalline.

Mineral soil. Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area. An area that has little or no natural soil and supports little or no vegetation.

Moderately coarse textured soil. Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil. Clay loam, sandy clay loam, or silty clay loam.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent.* The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain. A natural elevation of the land surface, rising more than 1,000 feet above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range.

Mudstone. Sedimentary rock formed by induration of silt and clay in approximately equal amounts.

Munsell notation. A designation of color by degrees of the three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Neutral soil. A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nutrient, plant. Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter. Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low	less than 0.5 percent
Low	0.5 to 1.0 percent
Moderately low	1.0 to 2.0 percent
Moderate	2.0 to 4.0 percent
High	4.0 to 8.0 percent
Very high	more than 8.0 percent

Parent material. The unconsolidated organic and mineral material in which soil forms.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly (in tables). The slow movement of water through the soil adversely affects the specified use.

Permeability. The quality of the soil that enables water or air to move downward through the profile. The rate at which a saturated soil transmits water is accepted as a measure of this quality. In soil physics, the rate is referred to as "saturated hydraulic conductivity," which is defined in the "Soil Survey Manual." In line with conventional usage in published soil surveys, this rate of flow continues to be expressed as "permeability." Terms describing permeability, measured in inches per hour, are as follows:

Extremely slow	0.0 to 0.01 inch
Very slow	less than 0.06 inch
Slow	0.06 to 0.2 inch
Moderately slow	0.2 to 0.6 inch
Moderate	0.6 inch to 2.0 inches
Moderately rapid	2.0 to 6.0 inches
Rapid	6.0 to 20 inches
Very rapid	more than 20 inches

Phase, soil. A subdivision of a soil series based on features that affect its use and management. For example, slope, stoniness, and flooding.

pH value. A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Piping (in tables). Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting (in tables). Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from semisolid to plastic.

Plateau. An extensive upland mass with relatively flat summit area that is considerably elevated (more than 100 meters) above adjacent lowlands and separated from them on one or more sides by escarpments.

Playa. The generally dry and nearly level lake plain that occupies the lowest parts of closed depressional areas, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff.

Plowpan. A compacted layer formed in the soil directly below the plowed layer.

Ponding. Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poor filter (in tables). Because of rapid or very rapid permeability, the soil may not adequately filter effluent from a waste disposal system.

Poorly graded. Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Poor outlets (in tables). Refers to areas where surface or subsurface drainage outlets are difficult or expensive to install.

Potential native plant community. See Climax plant community.

Potential rooting depth (effective rooting depth). Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning. Burning an area under conditions of weather and soil moisture and at the proper time of day that will result in the intensity of heat and spread required to accomplish specific forest management, wildlife, grazing, or fire hazard reduction purposes.

Productivity, soil. The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use. Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Range condition. The present composition of the plant community on a range site in relation to the potential natural plant community for that site. Range condition is expressed as excellent, good, fair, or poor on the basis of how much the present plant community has departed from the potential.

Rangeland. Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Range site. An area of rangeland where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. A range site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other range sites in kind or proportion of species or total production.

Reaction, soil. A measure of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Extremely acid	below 4.5
Very strongly acid	4.5 to 5.0
Strongly acid	5.1 to 5.5
Moderately acid	5.6 to 6.0
Slightly acid	6.1 to 6.5
Neutral	6.6 to 7.3
Slightly alkaline	7.4 to 7.8
Moderately alkaline	7.9 to 8.4
Strongly alkaline	8.5 to 9.0
Very strongly alkaline	9.1 and higher

Red beds. Sedimentary strata that are mainly red and are made up largely of sandstone, siltstone, and shale.

Regolith. The unconsolidated mantle of weathered rock and soil material on the earth's surface; the loose earth material above the solid rock.

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered or partly weathered mineral material that accumulated as consolidated rock disintegrated in place.

Rill. A steep sided channel resulting from accelerated erosion. A rill is generally a few inches deep and not wide enough to be an obstacle to farm machinery.

Road cut. A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth (in tables). Shallow root zone. The soil is shallow over a layer that greatly restricts roots.

Root zone. The part of the soil that can be penetrated by plant roots.

Runoff. The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil. A soil containing soluble salts in an amount that impairs the growth of plants. A saline soil does not contain excess exchangeable sodium.

Salty water (in tables). Water that is too salty for consumption by livestock.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-sized particles.

Scarification. The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock. Rock made up of particles deposited from suspension in water. The chief kinds of sedimentary rock are conglomerate, formed from gravel; sandstone, formed from sand; shale, formed from clay; and limestone, formed from soft masses of calcium carbonate. There are many intermediate types. Some wind-deposited sand is consolidated into sandstone.

Seepage (in tables). The movement of water through the soil. Seepage adversely affects the specified use.

Sequum. A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil. A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer or of the underlying material. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Shrink-swell (in tables). The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silica. A combination of silicon and oxygen. The mineral form is called quartz.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Sinkhole. A depression in the landscape where limestone has been dissolved.

Site class. A grouping of site indexes into five to seven production capability levels. Each level can be represented by a site curve.

Site curve (50-year). A set of related curves on a graph that shows the average height of dominant trees for the range of ages on soils that differ in productivity. Each level is represented by a curve. The basis of the curves is the height of dominant trees that are 50 years old or are 50 years old at breast height.

Site curve (100-year). A set of related curves on a graph that show the average height of dominant and codominant trees for a range of ages on soils that differ in productivity. Each level is represented by a curve. The basis of the curves is the height of dominant and codominant trees that are 100 years old or are 100 years old at breast height.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slick spot. A small area of soil having a puddled, crusted, or smooth surface and an excess of exchangeable sodium. The soil is generally clayey, is slippery when wet, is low in productivity, and supports little or no vegetation.

Slippage (in tables). Soil mass susceptible to movement downslope when loaded, excavated, or wet.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance. In this survey the following slope classes are as follows:

Nearly level	0 to 2 percent
Gently sloping	2 to 6 percent
Moderately sloping	6 to 10 percent
Strongly sloping	10 to 15 percent
Moderately steep	15 to 30 percent
Steep	30 to 50 percent
Very steep	50 percent and higher

Slope (in tables). Slope is great enough that special practices are required to ensure satisfactory performance of the soil for a specific use.

Slow intake (in tables). The slow movement of water into the soil.

Slow refill (in tables). The slow filling of ponds, resulting from restricted permeability in the soil.

Small stones (in tables). Rock fragments less than 3 inches (7.6 centimeters) in diameter. Small stones adversely affect the specified use of the soil.

Sodic (alkali) soil. A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodicity. The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^+ to Ca^{++} + Mg^{++}. The degrees of sodicity and their respective ratios are:

Slight	less than 13:1
Moderate	13-30:1
Strong	more than 30:1

Soft bedrock. Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil. A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Soil depth. The thickness of the soil mantle over bedrock; i.e., very shallow is 4 to 10 inches thick, shallow is 10 to 20 inches thick, moderately deep is 20 to 40 inches thick, deep is 40 to 60 inches thick, very deep is more than 60 inches thick.

Soil separates. Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand	2.0 to 1.0
Coarse sand	1.0 to 0.5
Medium sand	0.5 to 0.25
Fine sand	0.25 to 0.10
Very fine sand	0.10 to 0.05
Silt	0.05 to 0.002
Clay	less than 0.002

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stripcropping. Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, geologic. (1) The general disposition, attitude, arrangement, or relative positions of the rock masses of a region or area; (2) The sum total of the structural features of an area.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are—*platy* (laminated), *prismatic* (vertical axis of aggregates longer than horizontal), *columnar* (prisms with rounded tops), *blocky* (angular or subangular), and *granular*. *Structureless* soils are either *single grained* (each grain by itself, as in dune sand) or *massive* (the particles adhering without any regular cleavage, as in many hardpans).

Stubble mulch. Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling. Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum. The part of the soil below the solum.

Subsurface layer. Technically, the E horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Summer fallow. The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summer wildlife habitat. A population or portion of a population uses this habitat annually during the summer, but not during the winter.

Surface layer. The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

Tailwater. In hydraulics, the water directly downstream from a dam or similar structure.

Talus. Fragments of rock and other soil material accumulated by gravity at the foot of cliffs or steep slopes.

Taxadjuncts. Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geologic). An old alluvial plain, ordinarily flat or undulating, bordering a river, a lake, or the sea.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer (in tables). Otherwise suitable soil material that is too thin for the specified use.

Till plain. An extensive area of nearly level to undulating soils underlain by glacial till.

Tilth, soil. The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Too arid (in tables). The soil is dry most of the time, and vegetation is difficult to establish.

Topsoil. The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Toxicity (in tables). Excessive amount of toxic substances, such as sodium or sulfur, that severely hinder establishment of vegetation or severely restrict plant growth.

Trace elements. Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tuff. A compacted deposit that is 50 percent or more volcanic ash and dust.

Unstable fill (in tables). Risk of caving or sloughing on banks of fill material.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Valley fill. In glaciated regions, material deposited in stream valleys by glacial meltwater. In nonglaciated regions, alluvium deposited by heavily loaded streams.

Variant, soil. A soil with properties believed to be sufficiently different from those of other known soils to justify a new series name, but comprising such a limited geographic area that creation of a new series is not justified.

Variegation. Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Water bars. Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.

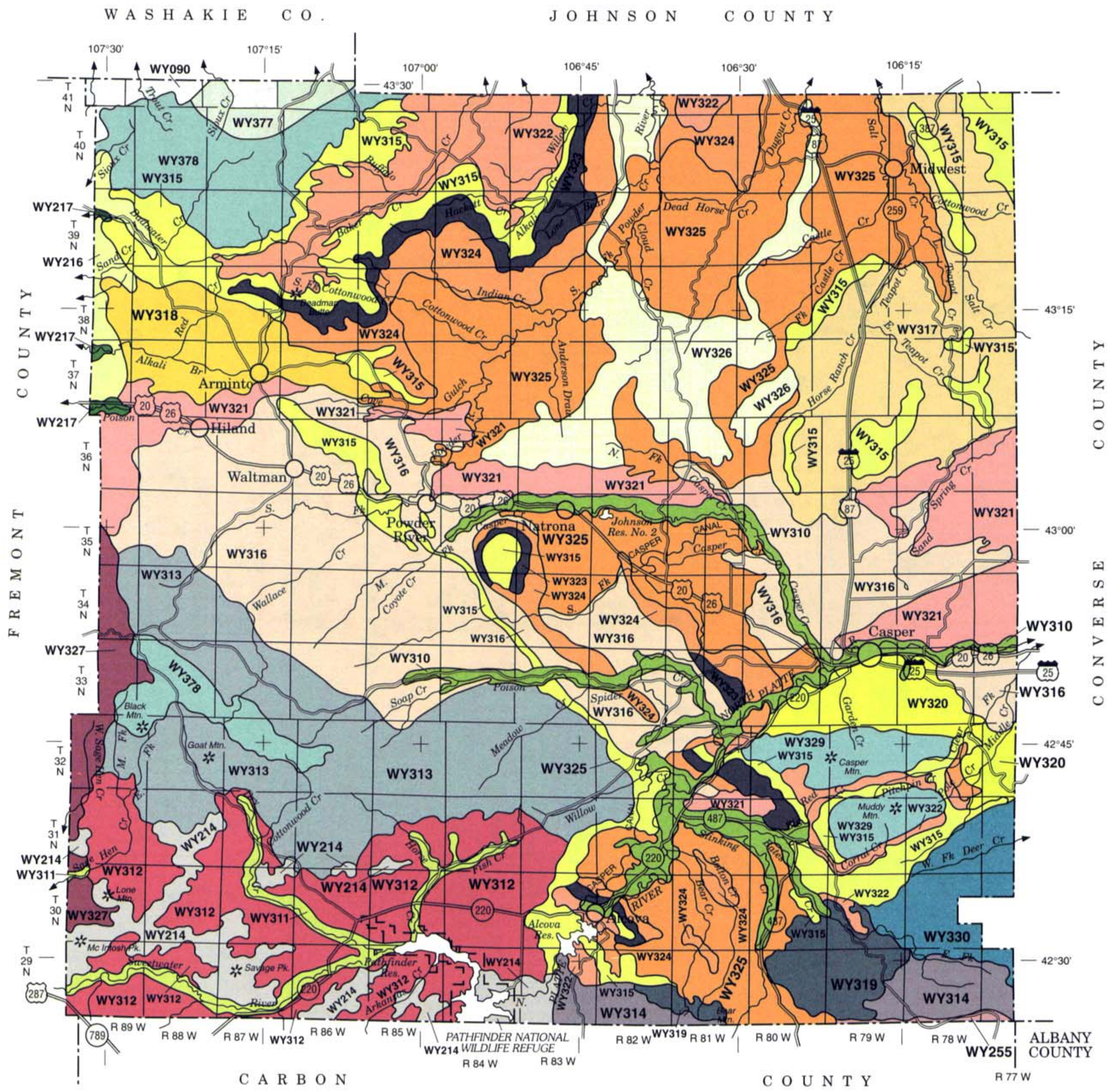
Well graded. Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wilting point (or permanent wilting point). The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow. The uprooting and tipping over of trees by the wind.

Winter wildlife habitat. A population or portion of a population uses this habitat annually only during the winter. A substantial number of animals use the habitat during this period.

Year-round wildlife habitat. A population or a substantial portion of a population uses this habitat during all seasons of the year.



SOIL LEGEND*

COOL AND WARM SOILS ON FLOOD PLAINS AND ASSOCIATED TERRACES

WY217	Typic Torrifluvents-Effington
WY310	Haverdad-Clarkelen-Arvada
WY311	Havermom-Tisworth

ROCK OUTCROP AND WARM SOILS ON UPLANDS

WY216	Persayo-Griffy
WY315	Shingle-Rencot-Rock outcrop
WY316	Hiland-Arvada-Theedle
WY317	Bowbac-Cambria-Taluce
WY318	Griffy-Saddle-Bributte
WY320	Copeman-Samday-Savageton
WY321	Orpha-Vonalee-Hiland
WY322	Roughlock-Redsun-Redbow
WY324	Bowbac-Sunup-Hiland
WY325	Lolite-Cadoma-Arvada
WY326	Amodac-Keyner

ROCK OUTCROP AND COOL SOILS ON UPLANDS

WY214	Cathedral-Pesmore-Rock outcrop
WY255	Forelle-Poposhia-Diamondville
WY312	Rock River-Ryan Park
WY313	Bosler-Lupinto-Cragosen
WY314	Bateson-Whiteriver-Nunnston
WY319	Cragosen-Chalkcreek-Rock outcrop
WY323	Neldore-Kather-Rock outcrop
WY327	Rock River-Bosler-Cragosen

ROCK OUTCROP AND COLD SOILS ON MOUNTAINS

WY090	Rock outcrop-Starley-Woosley
WY329	Alflack-Grimstone-Irson
WY330	Hazton-Sebud-Rock outcrop
WY377	Clayburn-Chittum-Rock outcrop
WY378	Bachus-Farlow-Starley

*The units on this legend are described in the text under the heading "General Soil Map Units."

N

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WYOMING AGRICULTURAL EXPERIMENT STATION

GENERAL SOIL MAP

NATRONA COUNTY AREA, WYOMING

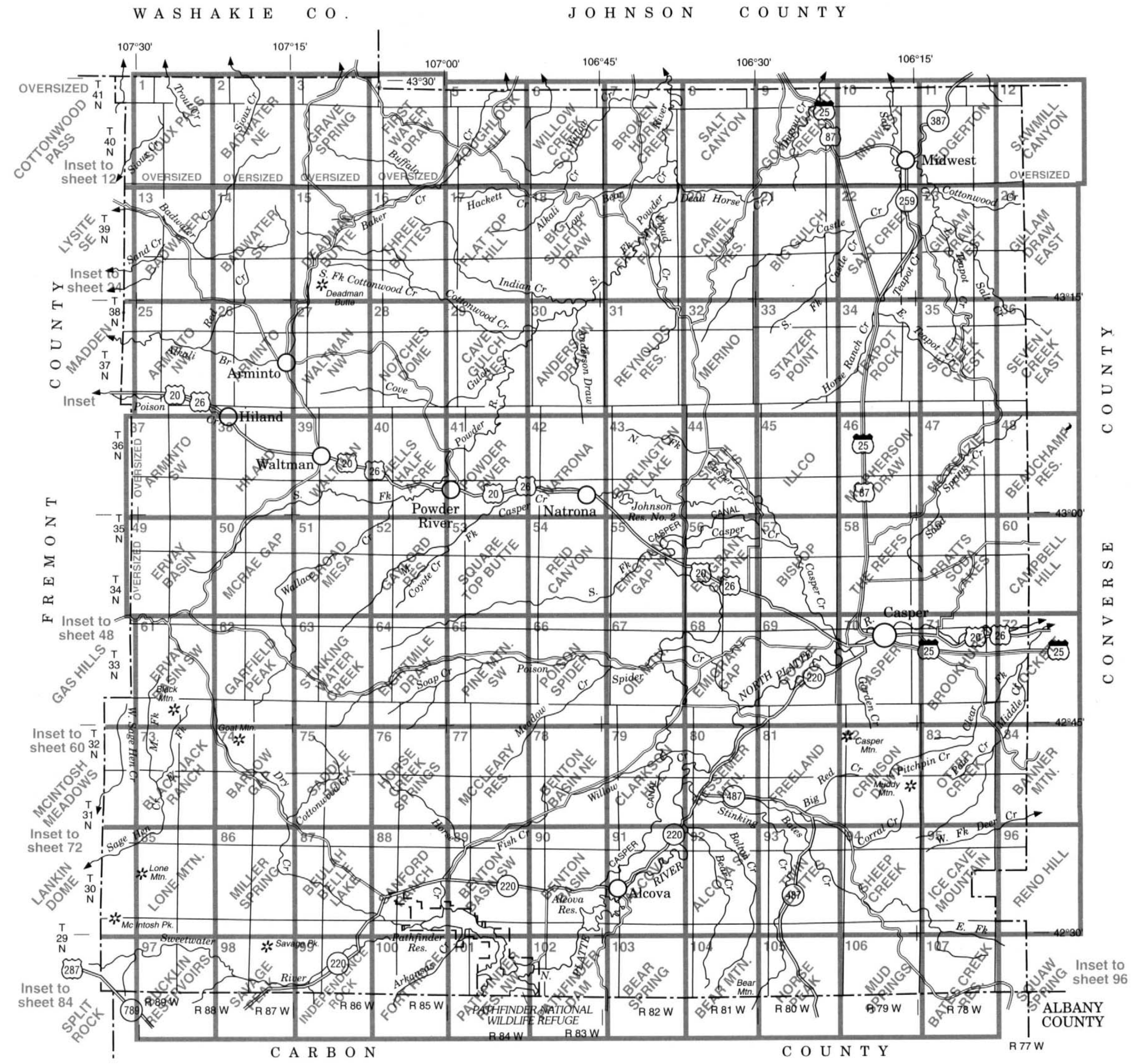
Compiled 1995

Scale 1:633,600

1 0 2 4 6 8 10 Miles

1 0 10 20 Km

Each area outlined on this map consist of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.



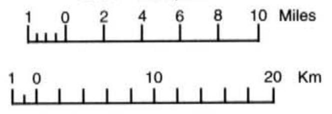
SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

INDEX TO MAP SHEETS

NATRONA COUNTY AREA, WYOMING

Scale 1:633,600



UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

NATRONA COUNTY AREA, WYOMING

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
WYOMING AGRICULTURAL EXPERIMENT STATION

SOIL LEGEND

Map symbols consist of numbers. The numbers represent the kind of soil.

SYMBOL	NAME
101	Absher loam, 0 to 3 percent slopes
102	Adel-Pagosa association, rolling
103	Alcova-Rock River sandy loamy, 0 to 10 percent slopes
104	Alcova-Stunner complex, 3 to 15 percent slopes
105	Alflack-Foxton complex, 4 to 25 percent slopes
106	Alflack-Irson-Foxton Variant complex, 3 to 20 percent slopes
107	Almy loam, 3 to 15 percent slopes
108	Amodac loam, 2 to 12 percent slopes
109	Amodac-Keyner complex, 2 to 12 percent slopes
110	Aquic Ustifluvents, saline, 0 to 3 percent slopes
111	Aquic Ustifluvents, saline-Orpha complex, undulating
112	Arvada-Absted-Slickspots complex, 0 to 6 percent slopes
113	Arvada, runon-Slickspots complex, 0 to 3 percent slopes
114	Bachus-Nathrop complex, 4 to 20 percent slopes
115	Bachus-Clayburn association, undulating
116	Bachus-Pagosa association, 4 to 20 percent slopes
117	Badland
118	Badwater-Rubble land association, moderately steep
119	Barnum-Redbank fine sandy loams, 0 to 3 percent slopes
120	Bateson loam, 0 to 6 percent slopes
121	Bessemer sandy loam, 1 to 10 percent slopes
122	Bessemer gravelly clay loam, 1 to 8 percent slopes
123	Bessemer-Urban land complex, 2 to 8 percent slopes
124	Blackdraw clay loam, 3 to 10 percent slopes
125	Blackdraw-Lolite-Gullied land complex, 3 to 20 percent slopes
126	Blazon-Worfman loams, 6 to 30 percent slopes
127	Blazon-Cragosen-Worfman association, hilly
128	Boettcher-Brownsto complex, 10 to 30 percent slopes
129	Boettcher-Pinelli-Worfman loams, 3 to 15 percent slopes
130	Bosler-Alcova complex, 2 to 10 percent slopes
131	Bosler-Hiland association, rolling
132	Bowbac-Hiland fine sandy loams, 3 to 10 percent slopes
133	Bowbac-Hiland-Worf complex, 3 to 15 percent slopes
134	Bowbac-Taluce-Terro complex, 6 to 20 percent slopes
135	Bridger loam, 2 to 15 percent slopes
136	Brokenhorn-Hyshot clay loams, 3 to 15 percent slopes
137	Brownsto-Lupinto complex, 6 to 40 percent slopes
138	Buffcreek-Redarrow association, 2 to 25 percent slopes
139	Cabin-Herbman complex, 6 to 40 percent slopes
140	Cadoma-Renohill-Samday clay loams, 3 to 12 percent slopes
141	Cambria sandy clay loam, 0 to 6 percent slopes
142	Cambria-Zigweid complex, 2 to 15 percent slopes
143	Cambria-Zigweid association, dry, sloping
144	Castner-Chincap-Rock outcrop complex, 10 to 40 percent slopes
145	Castner-Rock outcrop complex, 5 to 25 percent slopes
146	Caveguich loam, 2 to 8 percent slopes
147	Caveguich-Brokenhorn complex, 2 to 10 percent slopes
148	Chalkcreek loam, 0 to 8 percent slopes
149	Chipendale-Chipenhill clay loams, 5 to 15 percent slopes
150	Chipendale-Razsun clay loams, 3 to 15 percent slopes
151	Chipenhill gravelly clay loam, 5 to 40 percent slopes
152	Chipenhill-Rock outcrop complex, 15 to 30 percent slopes
153	Chittum-Nielsen-Rock outcrop complex, 2 to 10 percent slopes
154	Chittum-Sneffels loams, 5 to 40 percent slopes
155	Clarkelen sandy loam, gravelly substratum, 0 to 4 percent slopes
156	Clayburn-Moslander association, gently sloping
157	Coalmont-Milren-Cragosen complex, rolling
158	Connerton loam, 0 to 3 percent slopes
159	Copeman loam, 0 to 8 percent slopes
160	Crago gravelly loam, 3 to 15 percent slopes
161	Crago-Pensore complex, 15 to 40 percent slopes
162	Cragosen gravelly loam, 6 to 30 percent slopes
163	Cragosen-Chalkcreek association, 3 to 45 percent slopes
164	Cragosen Variant-Brownsto Variant association, hilly
165	Curecanti very stony loam, 3 to 12 percent slopes
166	Curecanti Variant very cobbly loam, 8 to 35 percent slopes
167	Cushman-Forkwood association, rolling
168	Cushool-Worfstone sandy loams, 2 to 15 percent slopes
169	Decross-Woosley association, sloping
170	Delphill-Blazon loams, 5 to 30 percent slopes
171	Delplain-Rock outcrop complex, 3 to 30 percent slopes
172	Diamondville-Worfman complex, 3 to 15 percent slopes
173	Docpar loam, 0 to 4 percent slopes
174	Draknab loamy fine sand, 0 to 4 percent slopes
175	Dune land
176	Edlin-Rock River-Bosler complex, 3 to 30 percent slopes
177	Edlin-Ryan Park sandy loams, 2 to 12 percent slopes
178	Effington-Uffens complex, 0 to 6 percent slopes
179	Enos-Wallson association, rolling
180	Farlow, moist-Starley-Rock outcrop complex, 40 to 65 percent slopes
181	Farlow-Starley association, moderately steep
182	Fiveoh-Thermopolis association, hilly
183	Forelle loam, 2 to 9 percent slopes
184	Forelle-Diamondville complex, 3 to 15 percent slopes
185	Forelle-Lupinto association, rolling
186	Forkwood-Keyner loams, 3 to 10 percent slopes
187	Forkwood-Ulm complex, 0 to 6 percent slopes
188	Forkwood-Zigweid association, sloping
189	Gateridge-Taluce Variant association, steep
190	Griffy sandy loam, 2 to 15 percent slopes
191	Griffy-Emblem fine sandy loams, 0 to 6 percent slopes
192	Grimstone-Grimstone Variant loams, 4 to 35 percent slopes
193	Haverdad loam, 0 to 4 percent slopes
194	Haverdad-Clarkelen complex, 0 to 3 percent slopes
195	Haverdad-Clarkelen complex, saline, 0 to 3 percent slopes
196	Havermom fine sandy loam, 0 to 5 percent slopes
197	Hawkstone loamy sand, 5 to 20 percent slopes
198	Hazton-Rock outcrop complex, 10 to 40 percent slopes
199	Hiland loamy sand, 2 to 15 percent slopes
200	Hiland loamy sand, gravelly substratum, 1 to 6 percent slopes
201	Hiland sandy loam, 0 to 6 percent slopes
202	Inchau-Clayburn-Chittum complex, 4 to 20 percent slopes
203	Inchau-Farlow complex, 15 to 40 percent slopes
204	Irson very gravelly loam, 20 to 45 percent slopes
205	Irson-Kezar-Rock outcrop complex, 6 to 40 percent slopes
206	Irson-Sebud complex, 40 to 65 percent slopes
207	Keeline-Taluce-Rock outcrop complex, 6 to 20 percent slopes
208	Keyner sandy clay loam, 3 to 10 percent slopes
209	Keyner-Absted-Slickspots complex, 0 to 6 percent slopes
210	Keyner-Hiland association, gently sloping
211	Kezar-Irson-Clayburn association, hilly
212	Lander loam, 0 to 3 percent slopes
213	Leavitt-Coutis complex, 5 to 40 percent slopes
214	Lolite-Rock outcrop complex, 10 to 40 percent slopes
215	Lolite, dry-Rock outcrop complex, 5 to 50 percent slopes
216	Lonebear clay loam, 3 to 12 percent slopes
217	Lupinto-Alcova complex, 3 to 30 percent slopes
218	Lupinto Family, steep
219	McFadden-Edlin-Blackhall complex, 5 to 40 percent slopes
220	Middlewood-Kather clay loams, 6 to 30 percent slopes
221	Milren-Bosler-Rock River sandy loams, 1 to 12 percent slopes
222	Mudray-Bributte-Birdsley complex, 6 to 30 percent slopes
223	Natrop-Starley complex, 8 to 35 percent slopes
224	Neldore-Moyerson-Rock outcrop complex, 10 to 30 percent slopes
225	Nunnston loam, 2 to 15 percent slopes
226	Oceanet-Persayo complex, 6 to 30 percent slopes
227	Orella-Cadoma-Petrie clay loams, 3 to 30 percent slopes
228	Orella-Rock outcrop complex, 3 to 30 percent slopes
229	Orpha loamy sand, 10 to 30 percent slopes
230	Orpha-Tullock-Rock outcrop complex, 6 to 45 percent slopes
231	Orpha-Vonalee-Roughlock complex, 9 to 30 percent slopes
232	Persayo-Greybull association, 6 to 30 percent slopes
233	Pesmore-Asholler-Rock outcrop complex, 15 to 55 percent slopes
234	Petrie clay loam, dry, 0 to 3 percent slopes
235	Petrie-Zigweid complex, wet, 0 to 3 percent slopes
236	Petrie-Arvada complex, 0 to 6 percent slopes
237	Peyton-Holderness loams, 3 to 15 percent slopes
238	Pits and dumps
239	Pokeman-Threetop loams, 2 to 12 percent slopes
240	Poposhia-Blazon complex, 3 to 15 percent slopes
241	Rawlins-McFadden-Blackhall complex, 2 to 20 percent slopes
242	Rawlins-Rock River sandy loams, 3 to 15 percent slopes
243	Redsun-Rock outcrop complex, 15 to 30 percent slopes
244	Redsun-Rock outcrop-Redbow complex, 3 to 15 percent slopes
245	Rekop-Rock outcrop complex, 5 to 40 percent slopes
246	Relsob-Peyton sandy loams, 3 to 15 percent slopes
247	Rencot-Blazon complex, 15 to 40 percent slopes
248	Rencot-Rock outcrop complex, 5 to 15 percent slopes
249	Rencot-Duffson association, rolling
250	Rencot-Thermopolis-Rock outcrop association, 5 to 40 percent slopes
251	Rivra sandy loam, 0 to 6 percent slopes
252	Rivra-Urban land complex, 0 to 6 percent slopes
253	Rock outcrop
254	Rock outcrop-Birdsley complex, 30 to 60 percent slopes
255	Rock outcrop-Cathedral complex, 10 to 50 percent slopes
256	Rock outcrop-Ustic Torriorthents, shallow-Rubble land complex, 30 to 100 percent slopes
257	Rock River sandy loam, 0 to 5 percent slopes
258	Rock River-Hawkstone sandy loams, 3 to 15 percent slopes
259	Rock River-Pinelli-Blazon complex, 3 to 20 percent slopes
260	Rock River-Rawlins-Brownsto complex, 3 to 20 percent slopes
261	Rock River-Ryan Park-McFadden complex, 5 to 30 percent slopes
262	Rock River-Worfman sandy loams, 2 to 15 percent slopes
263	Rock River-Ryan Park-Hawkstone association, undulating
264	Roughlock loam, 0 to 6 percent slopes
265	Roughlock-Redbow-Redspear loams, 3 to 15 percent slopes
266	Roughlock-Buffcreek association, undulating
267	Rubble land-Ustic Torriorthents, bouldery, complex, 20 to 60 percent slopes
268	Ryan Park loamy sand, 2 to 10 percent slopes
269	Ryan Park-Elk Mountain sandy loams, 3 to 15 percent slopes
270	Saddle-Griffy association, rolling
271	Salt flats
272	Samday very cobbly clay, 20 to 60 percent slopes
273	Savageton-Samday complex, 3 to 15 percent slopes
274	Shingle-Samday complex, 3 to 45 percent slopes
275	Shingle-Taluce-Rock outcrop complex, 10 to 40 percent slopes
276	Shingle-Theedle association, rolling
277	Silhouette clay loam, 0 to 6 percent slopes
278	Silhouette-Petrie clay loams, 1 to 6 percent slopes
279	Starley-Rock outcrop complex, 4 to 25 percent slopes
280	Stunner-Pinelli complex, 3 to 15 percent slopes
281	Sunup-Kishona-Rock outcrop complex, 10 to 30 percent slopes
282	Terro-Vonalee association, rolling
283	Theedle-Shingle-Kishona complex, 6 to 40 percent slopes, gullied
284	Threetop-Sunup-Frontier complex, 3 to 20 percent slopes
285	Tisworth sandy loam, 0 to 5 percent slopes
286	Travson-Rock outcrop complex, 10 to 40 percent slopes
287	Typic Fluvaquents-Aquic Ustifluvents, saline, complex, 0 to 3 percent slopes
288	Typic Haplaquolls, 0 to 4 percent slopes
289	Typic Torrifluvents, 0 to 3 percent slopes
290	Uffens, thick surface-Uffens very fine sandy loams, 0 to 6 percent slopes
291	Uffens, runon-Typic Torrifluvents complex, 0 to 3 percent slopes
292	Ulm clay loam, 2 to 6 percent slopes
293	Ulm-Absted complex, 0 to 6 percent slopes
294	Ulrant loam, 3 to 15 percent slopes
295	Urban land-Clarkelen, gravelly substratum, complex, 0 to 4 percent slopes
296	Urban land-Docpar complex, 0 to 6 percent slopes
297	Urban land-Savageton-Samday complex, 4 to 25 percent slopes
298	Urban land-Silhouette complex, 0 to 4 percent slopes
299	Urban land-Theedle-Shingle complex, 4 to 20 percent slopes
300	Vonalee loamy sand, 3 to 10 percent slopes
301	Vonalee-Hiland complex, 3 to 15 percent slopes
302	Vonalee-Slickspots complex, 3 to 15 percent slopes
303	Whiteriver loam, 0 to 6 percent slopes
304	Woosley-Starley association, 6 to 30 percent slopes
305	Worf-Bowbac fine sandy loams, 4 to 12 percent slopes
306	Worf-Briggsdale loams, 3 to 15 percent slopes
307	Worf Variant-Cushman Variant-Peyton association, rolling
308	Worfstone-McFadden-Lupinto complex, 6 to 50 percent slopes
309	Zeomont-Ryan Park loamy sands, 5 to 15 percent slopes
310	Zigweid loam, 2 to 9 percent slopes
311	Zigweid-Theedle loams, 3 to 15 percent slopes
312	Zigweid-Urban land complex, 2 to 8 percent slopes

CONVENTIONAL AND SPECIAL SYMBOLS LEGEND

CULTURAL FEATURES

BOUNDARIES

- National, state, or province ——— – –
- County or parish ——— –
- Minor civil division — — — —
- Reservation (national forest or park, state forest or park, and large airport) —— · ——
- Land grant —— ·· ——
- Limit of soil survey (label) ————
- Field sheet matchline and neatline ————

AD HOC BOUNDARY (label) Davis Airstrip

- Small airport, airfield, park, oilfield, cemetery, or flood pool FLOOD POOL LINE

STATE COORDINATE TICK
1 890 000 FEET ——┴——

LAND DIVISION CORNER
(sections and land grants) ∟ ⊥ + ┼

ROADS

- Divided (median shown if scale permits) ═══
- Other roads ————
- Trail — — — — —

ROAD EMBLEM & DESIGNATIONS

- Interstate 66
- Federal 287
- State 52
- County, farm or ranch 398

RAILROAD —┼————┼—

POWER TRANSMISSION LINE
(normally not shown) · · • · · • · · •

PIPE LINE (normally not shown) ├──┤├──┤├──┤

FENCE (normally not shown) ———— · ——

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or Small
(Named where applicable) water w

PITS

- Gravel pit ⚒
- Mine or quarry ⚒

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban area) (occupied) ■
- Church
- School
- Indian mound (label) ⌒ Indian Mound
- Located object (label) ⊙ Tower
- Tank (label) ● Gas
- Wells, oil or gas
- Windmill
- Kitchen midden ⊓

WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
  - Double-line (label) CANAL
  - Drainage and/or irrigation ─►── · ──

LAKES, PONDS AND RESERVOIRS

- Perennial water w
- Intermittent int i

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring ○-
- Well, artesian -●-
- Well, irrigation -○-
- Wet spot Ψ

SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS 101 218

ESCARPMENTS

- Bedrock (points down slope) V V V V V V V
- Other than bedrock (points down slope) ▾▾▾▾▾▾▾▾▾▾▾

SHORT STEEP SLOPE . . . .

GULLY ∿∿∿∿∿∿

DEPRESSION OR SINK ◇

SOIL SAMPLE (normally not shown) Ⓢ

MISCELLANEOUS

- Blowout ◡
- Clay spot ⁑
- Gravelly spot ∘°∘
- Gumbo, slick or scabby spot (sodic) ∅
- Dumps and other similar non soil areas ☰
- Prominent hill or peak ☼
- Rock outcrop (includes sandstone and shale) ∨
- Saline spot +
- Sandy spot ⁙
- Severely eroded spot ÷
- Slide or slip (tips point upslope))))
- Stony spot, very stony spot 0 00
- Cut and fill areas #

Tables

TABLE 1.--TEMPERATURE AND PRECIPITATION

(Recorded in the period 1949-91 at Casper, Wyoming)

Month	Temperature						Precipitation			
				2 years in 10 will have--				2 years in 10 will have--		
	Average daily maximum	Average daily minimum	Average	Maximum temperature higher than--	Minimum temperature lower than--	Average number of growing degree days*	Average	Less than--	More than--	Average number of days with 0.10 inch or more
	°F	°F	°F	°F	°F	Units	In	In	In	
January----	32.8	12.0	22.4	54	-25	5	0.54	0.27	0.80	1
February---	37.2	16.0	26.6	60	-17	13	0.58	0.35	0.79	1
March------	44.4	21.1	32.7	69	-9	44	0.98	0.54	1.38	3
April------	55.9	29.5	42.7	79	8	159	1.47	0.75	2.10	4
May--------	66.3	38.6	52.4	87	23	396	2.05	0.96	2.98	5
June-------	78.4	47.5	63.0	97	33	688	1.38	0.47	2.13	3
July-------	87.2	54.5	70.8	99	41	957	1.16	0.55	1.69	3
August-----	85.4	52.7	69.0	97	38	899	0.64	0.20	1.00	1
September--	73.9	42.4	58.2	92	24	548	0.91	0.24	1.45	2
October----	60.7	32.9	46.8	82	12	259	0.92	0.37	1.42	2
November---	44.4	22.1	33.2	67	-9	52	0.73	0.32	1.08	2
December---	35.0	14.9	24.9	56	-22	9	0.60	0.26	0.89	1
Yearly:										
Average---	58.5	32.0	45.2	---	---	---	---	---	---	---
Extreme---	104	-41	---	100	-30	---	---	---	---	---
Total-----	---	---	---	---	---	4,029	11.97	9.48	14.31	28

* A growing degree day is a unit of heat available for plant growth. It can be calculated by adding the maximum and minimum daily temperatures, dividing the sum by 2, and subtracting the temperature below which growth is minimal for the principal crops in the area (40 degrees F).

TABLE 2.--FREEZE DATES IN SPRING AND FALL

(Recorded in the period 1949-91 at Casper, Wyoming)

Probability	Temperature		
	24 oF or lower	28 oF or lower	32 oF or lower
Last freezing temperature in spring:			
1 year in 10 later than--	May 8	May 21	June 7
2 years in 10 later than--	May 3	May 15	June 1
5 years in 10 later than--	April 24	May 4	May 22
First freezing temperature in fall:			
1 year in 10 earlier than--	September 23	September 15	September 8
2 years in 10 earlier than--	September 29	September 21	September 12
5 years in 10 earlier than--	October 11	October 1	September 21

TABLE 3.--GROWING SEASON

(Recorded in the period 1949-91 at Casper, Wyoming)

Probability	Daily minimum temperature during growing season		
	Higher than 24 oF	Higher than 28 oF	Higher than 32 oF
	Days	Days	Days
9 years in 10	144	124	100
8 years in 10	150	132	107
5 years in 10	161	146	121
2 years in 10	172	160	136
1 year in 10	178	168	143

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
101	Absher loam, 0 to 3 percent slopes	2,435	0.1
102	Adel-Pagosa association, rolling	3,111	0.1
103	Alcova-Rock River sandy loams, 0 to 10 percent slopes	25,706	0.7
104	Alcova-Stunner complex, 3 to 15 percent slopes	54,842	1.6
105	Alflack-Foxton complex, 4 to 25 percent slopes	4,439	0.1
106	Alflack-Irson-Foxton Variant complex, 3 to 20 percent slopes	7,430	0.2
107	Almy loam, 3 to 15 percent slopes	988	*
108	Amodac loam, 2 to 12 percent slopes	12,840	0.4
109	Amodac-Keyner complex, 2 to 12 percent slopes	60,668	1.8
110	Aquic Ustifluvents, saline, 0 to 3 percent slopes	7,039	0.2
111	Aquic Ustifluvents, saline-Orpha complex, undulating	2,440	0.1
112	Arvada-Absted-Slickspots complex, 0 to 6 percent slopes	69,751	2.0
113	Arvada, runon-Slickspots complex, 0 to 3 percent slopes	11,392	0.3
114	Bachus-Nathrop complex, 4 to 20 percent slopes	4,690	0.1
115	Bachus-Clayburn association, undulating	8,398	0.2
116	Bachus-Pagosa association, 4 to 20 percent slopes	3,520	0.1
117	Badland	14,645	0.4
118	Badwater-Rubble land association, moderately steep	13,639	0.4
119	Barnum-Redbank fine sandy loams, 0 to 3 percent slopes	2,165	0.1
120	Bateson loam, 0 to 6 percent slopes	31,688	0.9
121	Bessemer sandy loam, 1 to 10 percent slopes	3,140	0.1
122	Bessemer gravelly clay loam, 1 to 8 percent slopes	4,160	0.1
123	Bessemer-Urban land complex, 2 to 8 percent slopes	800	*
124	Blackdraw clay loam, 3 to 10 percent slopes	6,330	0.2
125	Blackdraw-Lolite-Gullied land complex, 3 to 20 percent slopes	78,767	2.3
126	Blazon-Worfman loams, 6 to 30 percent slopes	7,465	0.2
127	Blazon-Cragosen-Worfman association, hilly	16,140	0.5
128	Boettcher-Brownsto complex, 10 to 30 percent slopes	8,510	0.2
129	Boettcher-Pinelli-Worfman loams, 3 to 15 percent slopes	34,119	1.0
130	Bosler-Alcova complex, 2 to 10 percent slopes	24,726	0.7
131	Bosler-Hiland association, rolling	5,022	0.1
132	Bowbac-Hiland fine sandy loams, 3 to 10 percent slopes	53,876	1.6
133	Bowbac-Hiland-Worf complex, 3 to 15 percent slopes	16,090	0.5
134	Bowbac-Taluce-Terro complex, 6 to 20 percent slopes	58,057	1.7
135	Bridger loam, 2 to 15 percent slopes	5,792	0.2
136	Brokenhorn-Hyshot clay loams, 3 to 15 percent slopes	6,890	0.2
137	Brownsto-Lupinto complex, 6 to 40 percent slopes	44,303	1.3
138	Buffcreek-Redarrow association, 2 to 25 percent slopes	7,245	0.2
139	Cabin-Herbman complex, 6 to 40 percent slopes	11,025	0.3
140	Cadoma-Renohill-Samday clay loams, 3 to 12 percent slopes	39,930	1.2
141	Cambria sandy clay loam, 0 to 6 percent slopes	5,382	0.2
142	Cambria-Zigweid complex, 2 to 15 percent slopes	30,472	0.9
143	Cambria-Zigweid association, dry, sloping	6,280	0.2
144	Castner-Chincap-Rock outcrop complex, 10 to 40 percent slopes	1,075	*
145	Castner-Rock outcrop complex, 5 to 25 percent slopes	1,720	0.1
146	Cavegulch loam, 2 to 8 percent slopes	13,210	0.4
147	Cavegulch-Brokenhorn complex, 2 to 10 percent slopes	4,840	0.1
148	Chalkcreek loam, 0 to 8 percent slopes	620	*
149	Chipendale-Chipenhill clay loams, 5 to 15 percent slopes	26,350	0.8
150	Chipendale-Razsun clay loams, 3 to 15 percent slopes	8,310	0.2
151	Chipenhill gravelly clay loam, 5 to 40 percent slopes	3,820	0.1
152	Chipenhill-Rock outcrop complex, 15 to 30 percent slopes	12,560	0.4
153	Chittum-Nielsen-Rock outcrop complex, 2 to 10 percent slopes	2,195	0.1
154	Chittum-Sneffels loams, 5 to 40 percent slopes	8,830	0.3
155	Clarkelen sandy loam, gravelly substratum, 0 to 4 percent slopes	1,404	*
156	Clayburn-Moslander association, gently sloping	3,891	0.1
157	Coalmont-Milren-Cragosen complex, rolling	2,200	0.1
158	Connerton loam, 0 to 3 percent slopes	2,475	0.1
159	Copeman loam, 0 to 8 percent slopes	5,480	0.2
160	Crago gravelly loam, 3 to 15 percent slopes	3,960	0.1

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
161	Crago-Pensore complex, 15 to 40 percent slopes	8,985	0.3
162	Cragosen gravelly loam, 6 to 30 percent slopes	8,550	0.2
163	Cragosen-Chalkcreek association, 3 to 45 percent slopes	16,238	0.5
164	Cragosen Variant-Brownsto Variant association, hilly	2,653	0.1
165	Curecanti very stony loam, 3 to 12 percent slopes	4,300	0.1
166	Curecanti Variant very cobbly loam, 8 to 35 percent slopes	1,400	*
167	Cushman-Forkwood association, rolling	61,328	1.8
168	Cushool-Worfstone sandy loams, 2 to 15 percent slopes	2,230	0.1
169	Decross-Woosley association, sloping	1,200	*
170	Delphill-Blazon loams, 5 to 30 percent slopes	11,225	0.3
171	Delplain-Rock outcrop complex, 3 to 30 percent slopes	7,970	0.2
172	Diamondville-Worfman complex, 3 to 15 percent slopes	7,836	0.2
173	Docpar loam, 0 to 4 percent slopes	560	*
174	Draknab loamy fine sand, 0 to 4 percent slopes	1,595	*
175	Dune land	1,430	*
176	Edlin-Rock River-Bosler complex, 3 to 30 percent slopes	14,314	0.4
177	Edlin-Ryan Park sandy loams, 2 to 12 percent slopes	3,247	0.1
178	Effington-Uffens complex, 0 to 6 percent slopes	14,662	0.4
179	Enos-Wallson association, rolling	4,376	0.1
180	Farlow, moist-Starley-Rock outcrop complex, 40 to 65 percent slopes	4,158	0.1
181	Farlow-Starley association, moderately steep	10,960	0.3
182	Fiveoh-Thermopolis association, hilly	18,581	0.5
183	Forelle loam, 2 to 9 percent slopes	18,151	0.5
184	Forelle-Diamondville complex, 3 to 15 percent slopes	38,276	1.1
185	Forelle-Lupinto association, rolling	1,540	*
186	Forkwood-Keyner loams, 3 to 10 percent slopes	17,784	0.5
187	Forkwood-Ulm complex, 0 to 6 percent slopes	7,498	0.2
188	Forkwood-Zigweid association, sloping	48,284	1.4
189	Gateridge-Taluce Variant association, steep	2,080	0.1
190	Griffy sandy loam, 2 to 15 percent slopes	15,029	0.4
191	Griffy-Emblem fine sandy loams, 0 to 6 percent slopes	8,740	0.3
192	Grimstone-Grimstone Variant loams, 4 to 35 percent slopes	1,331	*
193	Haverdad loam, 0 to 4 percent slopes	1,120	*
194	Haverdad-Clarkelen complex, 0 to 3 percent slopes	19,585	0.6
195	Haverdad-Clarkelen complex, saline, 0 to 3 percent slopes	37,980	1.1
196	Havermom fine sandy loam, 0 to 5 percent slopes	14,099	0.4
197	Hawkstone loamy sand, 5 to 20 percent slopes	11,628	0.3
198	Hazton-Rock outcrop complex, 10 to 40 percent slopes	21,566	0.6
199	Hiland loamy sand, 2 to 15 percent slopes	41,475	1.2
200	Hiland loamy sand, gravelly substratum, 1 to 6 percent slopes	12,700	0.4
201	Hiland sandy loam, 0 to 6 percent slopes	98,001	2.9
202	Inchau-Clayburn-Chittum complex, 4 to 20 percent slopes	8,428	0.2
203	Inchau-Farlow complex, 15 to 40 percent slopes	4,521	0.1
204	Irson very gravelly loam, 20 to 45 percent slopes	7,250	0.2
205	Irson-Kezar-Rock outcrop complex, 6 to 40 percent slopes	11,546	0.3
206	Irson-Sebud complex, 40 to 65 percent slopes	10,509	0.3
207	Keeline-Taluce-Rock outcrop complex, 6 to 20 percent slopes	9,570	0.3
208	Keyner sandy clay loam, 3 to 10 percent slopes	14,960	0.4
209	Keyner-Absted-Slickspots complex, 0 to 6 percent slopes	82,633	2.4
210	Keyner-Hiland association, gently sloping	11,551	0.3
211	Kezar-Irson-Clayburn association, hilly	30,160	0.9
212	Lander loam, 0 to 3 percent slopes	960	*
213	Leavitt-Coutis complex, 5 to 40 percent slopes	20,154	0.6
214	Lolite-Rock outcrop complex, 10 to 40 percent slopes	58,488	1.7
215	Lolite, dry-Rock outcrop complex, 5 to 50 percent slopes	40,116	1.2
216	Lonebear clay loam, 3 to 12 percent slopes	6,730	0.2
217	Lupinto-Alcova complex, 3 to 30 percent slopes	25,132	0.7
218	Lupinto Family, steep	28,935	0.8
219	McFadden-Edlin-Blackhall complex, 5 to 40 percent slopes	39,328	1.1
220	Middlewood-Kather clay loams, 6 to 30 percent slopes	19,077	0.6
221	Milren-Bosler-Rock River sandy loams, 1 to 12 percent slopes	4,200	0.1

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
222	Mudray-Bributte-Birdsley complex, 6 to 30 percent slopes	10,997	0.3
223	Nathrop-Starley complex, 8 to 35 percent slopes	8,325	0.2
224	Neldore-Moyerson-Rock outcrop complex, 10 to 30 percent slopes	44,151	1.3
225	Nunnston loam, 2 to 15 percent slopes	2,675	0.1
226	Oceanet-Persayo complex, 6 to 30 percent slopes	8,799	0.3
227	Orella-Cadoma-Petrie clay loams, 3 to 30 percent slopes	35,170	1.0
228	Orella-Rock outcrop complex, 3 to 30 percent slopes	23,113	0.7
229	Orpha loamy sand, 10 to 30 percent slopes	84,897	2.5
230	Orpha-Tullock-Rock outcrop complex, 6 to 45 percent slopes	6,830	0.2
231	Orpha-Vonalee-Roughlock complex, 9 to 30 percent slopes	3,636	0.1
232	Persayo-Greybull association, 6 to 30 percent slopes	3,331	0.1
233	Pesmore-Asholler-Rock outcrop complex, 15 to 55 percent slopes	24,898	0.7
234	Petrie clay loam, dry, 0 to 3 percent slopes	23,700	0.7
235	Petrie-Zigweid complex, wet, 0 to 3 percent slopes	5,710	0.2
236	Petrie-Arvada complex, 0 to 6 percent slopes	22,482	0.7
237	Peyton-Holderness loams, 3 to 15 percent slopes	13,504	0.4
238	Pits and dumps	2,630	0.1
239	Pokeman-Threetop loams, 2 to 12 percent slopes	1,685	*
240	Poposhia-Blazon complex, 3 to 15 percent slopes	2,093	0.1
241	Rawlins-McFadden-Blackhall complex, 2 to 20 percent slopes	3,741	0.1
242	Rawlins-Rock River sandy loams, 3 to 15 percent slopes	10,144	0.3
243	Redsun-Rock outcrop complex, 15 to 30 percent slopes	31,827	0.9
244	Redsun-Rock outcrop-Redbow complex, 3 to 15 percent slopes	7,430	0.2
245	Rekop-Rock outcrop complex, 5 to 40 percent slopes	9,745	0.3
246	Relsob-Peyton sandy loams, 3 to 15 percent slopes	14,701	0.4
247	Rencot-Blazon complex, 15 to 40 percent slopes	20,068	0.6
248	Rencot-Rock outcrop complex, 5 to 15 percent slopes	22,170	0.6
249	Rencot-Duffson association, rolling	3,295	0.1
250	Rencot-Thermopolis-Rock outcrop association, 5 to 40 percent slopes	16,413	0.5
251	Rivra sandy loam, 0 to 6 percent slopes	1,540	*
252	Rivra-Urban land complex, 0 to 6 percent slopes	680	*
253	Rock outcrop	1,550	*
254	Rock outcrop-Birdsley complex, 30 to 60 percent slopes	1,370	*
255	Rock outcrop-Cathedral complex, 10 to 50 percent slopes	47,390	1.4
256	Rock outcrop-Ustic Torriorthents, shallow-Rubble land complex, 30 to 100 percent slopes	75,731	2.2
257	Rock River sandy loam, 0 to 5 percent slopes	39,626	1.2
258	Rock River-Hawkstone sandy loams, 3 to 15 percent slopes	4,713	0.1
259	Rock River-Pinelli-Blazon complex, 3 to 20 percent slopes	6,856	0.2
260	Rock River-Rawlins-Brownsto complex, 3 to 20 percent slopes	7,174	0.2
261	Rock River-Ryan Park-McFadden complex, 5 to 30 percent slopes	13,633	0.4
262	Rock River-Worfman sandy loams, 2 to 15 percent slopes	9,130	0.3
263	Rock River-Ryan Park-Hawkstone association, undulating	16,035	0.5
264	Roughlock loam, 0 to 6 percent slopes	12,804	0.4
265	Roughlock-Redbow-Redspear loams, 3 to 15 percent slopes	10,335	0.3
266	Roughlock-Buffcreek association, undulating	4,810	0.1
267	Rubble land-Ustic Torriorthents, bouldery, complex, 20 to 60 percent slopes	3,480	0.1
268	Ryan Park loamy sand, 2 to 10 percent slopes	81,440	2.4
269	Ryan Park-Elk Mountain sandy loams, 3 to 15 percent slopes	10,205	0.3
270	Saddle-Griffy association, rolling	8,231	0.2
271	Salt flats	2,220	0.1
272	Samday very cobbly clay, 20 to 60 percent slopes	9,960	0.3
273	Savageton-Samday complex, 3 to 15 percent slopes	8,150	0.2
274	Shingle-Samday complex, 3 to 45 percent slopes	14,427	0.4
275	Shingle-Taluce-Rock outcrop complex, 10 to 40 percent slopes	62,258	1.8
276	Shingle-Theedle association, rolling	22,384	0.7
277	Silhouette clay loam, 0 to 6 percent slopes	11,350	0.3
278	Silhouette-Petrie clay loams, 1 to 6 percent slopes	16,556	0.5
279	Starley-Rock outcrop complex, 4 to 25 percent slopes	15,723	0.5
280	Stunner-Pinelli complex, 3 to 15 percent slopes	12,985	0.4
281	Sunup-Kishona-Rock outcrop complex, 10 to 30 percent slopes	11,371	0.3

See footnote at end of table.

TABLE 4.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS--Continued

Map symbol	Soil name	Acres	Percent
282	Terro-Vonalee association, rolling	17,936	0.5
283	Theedle-Shingle-Kishona complex, 6 to 40 percent slopes, gullied	101,894	3.0
284	Threetop-Sunup-Frontier complex, 3 to 20 percent slopes	20,075	0.6
285	Tisworth sandy loam, 0 to 5 percent slopes	7,776	0.2
286	Travson-Rock outcrop complex, 10 to 40 percent slopes	9,749	0.3
287	Typic Fluvaquents-Aquic Ustifluvents, saline, complex, 0 to 3 percent slopes	3,200	0.1
288	Typic Haplaquolls, 0 to 4 percent slopes	9,358	0.3
289	Typic Torrifluvents, 0 to 3 percent slopes	3,135	0.1
290	Uffens, thick surface-Uffens very fine sandy loams, 0 to 6 percent slopes	7,873	0.2
291	Uffens, runon-Typic Torrifluvents complex, 0 to 3 percent slopes	6,520	0.2
292	Ulm clay loam, 2 to 6 percent slopes	758	*
293	Ulm-Absted complex, 0 to 6 percent slopes	2,302	0.1
294	Ulrant loam, 3 to 15 percent slopes	6,301	0.2
295	Urban land-Clarkelen, gravelly substratum, complex, 0 to 4 percent slopes	2,200	0.1
296	Urban land-Docpar complex, 0 to 6 percent slopes	2,400	0.1
297	Urban land-Savageton-Samday complex, 4 to 25 percent slopes	2,560	0.1
298	Urban land-Silhouette complex, 0 to 4 percent slopes	2,040	0.1
299	Urban land-Theedle-Shingle complex, 4 to 20 percent slopes	440	*
300	Vonalee loamy sand, 3 to 10 percent slopes	17,870	0.5
301	Vonalee-Hiland complex, 3 to 15 percent slopes	66,006	1.9
302	Vonalee-Slickspots complex, 3 to 15 percent slopes	3,502	0.1
303	Whiteriver loam, 0 to 6 percent slopes	19,532	0.6
304	Woosley-Starley association, 6 to 30 percent slopes	7,166	0.2
305	Worf-Bowbac fine sandy loams, 4 to 12 percent slopes	1,640	*
306	Worf-Briggsdale loams, 3 to 15 percent slopes	4,440	0.1
307	Worf Variant-Cushman Variant-Peyton association, rolling	2,880	0.1
308	Worfstone-McFadden-Lupinto complex, 6 to 50 percent slopes	4,799	0.1
309	Zeomont-Ryan Park loamy sands, 5 to 15 percent slopes	28,539	0.8
310	Zigweid loam, 2 to 9 percent slopes	24,821	0.7
311	Zigweid-Theedle loams, 3 to 15 percent slopes	34,891	1.0
312	Zigweid-Urban land complex, 2 to 8 percent slopes	240	*
W	Water	17,760	0.5
	Total	3,431,080	100.0

* Less than 0.1 percent.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE

(Yields in the N columns are for nonirrigated soils; those in the I columns are for irrigated soils. Yields are those that can be expected under a high level of management. Absence of a yield indicates that the soil is not suited to the crop or the crop generally is not grown on the soil)

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Pasture	
	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM*	AUM*
101 Absher	VIIs	---	---	---	---	---	---	---
102**:								
Adel	VIe	---	---	---	---	---	---	---
Pagosa	VIe	---	---	---	---	---	---	---
103**:								
Alcova	IVe	---	---	---	---	---	---	---
Rock River	IVe	---	---	---	---	---	---	---
104**:								
Alcova	IVe	---	---	---	---	---	---	---
Stunner	IVe	---	---	---	---	---	---	---
105**:								
Alflack	VIs	---	---	---	---	---	---	---
Foxton	VIs	---	---	---	---	---	---	---
106**:								
Alflack	VIs	---	---	---	---	---	---	---
Irson	VIIs	---	---	---	---	---	---	---
Foxton Variant	VIe	---	---	---	---	---	---	---
107 Almy	VIe	---	---	---	---	---	---	---
108 Amodac	VIs	VIs	---	---	---	1.5	3.5	---
109**:								
Amodac	VIs	---	---	---	---	---	---	---
Keyner	IVs	---	---	---	---	---	---	---
110 Aquic Ustifluvents	VIs	VIs	---	---	0.5-1.5	---	1.0-3.0	---
111**:								
Aquic Ustifluvents	VIs	---	---	---	---	---	---	---
Orpha	VIe	---	---	---	---	---	---	---
112**:								
Arvada	VIs	---	---	---	---	---	---	---
Absted	IVs	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Pasture	
	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM*	AUM*
112**:								
Slickspots	VIII	---	---	---	---	---	---	---
113**:								
Arvada	VIs	---	---	---	---	---	---	---
Slickspots	VIII	---	---	---	---	---	---	---
114**:								
Bachus	VIe	---	---	---	---	---	---	---
Nathrop	VIIe	---	---	---	---	---	---	---
115**:								
Bachus	VIe	---	---	---	---	---	---	---
Clayburn	VIe	---	---	---	---	---	---	---
116**:								
Bachus	VIe	---	---	---	---	---	---	---
Pagosa	VIe	---	---	---	---	---	---	---
117 Badland	VIII	---	---	---	---	---	---	---
118**:								
Badwater	VIIs	---	---	---	---	---	---	---
Rubble land	VIII	---	---	---	---	---	---	---
119**:								
Barnum	IVe	---	---	---	---	---	---	---
Redbank	IVe	---	---	---	---	---	---	---
120 Bateson	IVe	---	---	---	---	---	---	---
121 Bessemer	IVe	---	---	---	---	---	---	---
122 Bessemer	IVe	IIIe	---	4.0	---	2.0	---	5.0
123**:								
Bessemer	IVe	---	---	---	---	---	---	---
Urban land.								
124 Blackdraw	VIe	---	---	---	---	---	---	---
125**:								
Blackdraw	VIe	---	---	---	---	---	---	---
Lolite	VIIs	---	---	---	---	---	---	---
Gullied land	VIII	---	---	---	---	---	---	

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Pasture	
	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM*	AUM*
126**:								
Blazon	VIIe	---	---	---	---	---	---	---
Worfman	VIIs	---	---	---	---	---	---	---
127**:								
Blazon	VIIe	---	---	---	---	---	---	---
Cragosen	VIIs	---	---	---	---	---	---	---
Worfman	VIIe	---	---	---	---	---	---	---
128**:								
Boettcher	VIe	---	---	---	---	---	---	---
Brownsto	VIe	---	---	---	---	---	---	---
129**:								
Boettcher	IVe	---	---	---	---	---	---	---
Pinelli	IVe	---	---	---	---	---	---	---
Worfman	VIIs	---	---	---	---	---	---	---
130**:								
Bosler	IVe	---	---	---	---	---	---	---
Alcova	IVe	---	---	---	---	---	---	---
131**:								
Bosler	IVe	---	---	---	---	---	---	---
Hiland	IVe	---	---	---	---	---	---	---
132**:								
Bowbac	IVe	IVe	---	4.0	---	2.0	---	5.0
Hiland	IVe	IIIe	---	5.0	---	2.5	---	6.0
133**:								
Bowbac	IVe	---	---	---	---	---	---	---
Hiland	IVe	---	---	---	---	---	---	---
Worf	VIIs	---	---	---	---	---	---	---
134**:								
Bowbac	IVe	---	---	---	---	---	---	---
Taluce	VIIe	---	---	---	---	---	---	---
Terro	IVe	---	---	---	---	---	---	---
135 Bridger	VIe	---	---	---	---	---	---	---
136**:								
Brokenhorn	IVe	---	---	---	---	---	---	---
Hyshot	IVe	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Pasture	
	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM*	AUM*
137**:								
Brownsto	VIIe	---	---	---	---	---	---	---
Lupinto	VIe	---	---	---	---	---	---	---
138**:								
Buffcreek	VIs	---	---	---	---	---	---	---
Redarrow	VIe	---	---	---	---	---	---	---
139**:								
Cabin	VIe	---	---	---	---	---	---	---
Herbman	VIIe	---	---	---	---	---	---	---
140**:								
Cadoma	VIe	---	---	---	---	---	---	---
Renohill	IVe	---	---	---	---	---	---	---
Samday	VIIs	---	---	---	---	---	---	---
141 Cambria	IVe	IIIe	---	5.0	---	2.5	---	6.0
142**:								
Cambria	IVe	---	---	---	---	---	---	---
Zigweid	IVe	---	---	---	---	---	---	---
143**:								
Cambria	VIe	---	---	---	---	---	---	---
Zigweid	VIe	---	---	---	---	---	---	---
144**:								
Castner	VIIs	---	---	---	---	---	---	---
Chincap	VIe	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
145**:								
Castner	VIIs	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
146 Cavegulch	VIs	---	---	---	---	---	---	---
147**:								
Cavegulch	VIs	---	---	---	---	---	---	---
Brokenhorn	IVe	---	---	---	---	---	---	---
148 Chalkcreek	IVe	---	---	---	---	---	---	---
149**:								
Chipendale	VIs	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Pasture	
	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM*	AUM*
149**:								
Chipenhill	VIIe	---	---	---	---	---	---	---
150**:								
Chipendale	VIs	---	---	---	---	---	---	---
Razsun	IVe	---	---	---	---	---	---	---
151 Chipenhill	VIIe	---	---	---	---	---	---	---
152**:								
Chipenhill	VIIe	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
153**:								
Chittum	VIe	---	---	---	---	---	---	---
Nielsen	VIIs	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
154**:								
Chittum	VIIe	---	---	---	---	---	---	---
Sneffels	VIe	---	---	---	---	---	---	---
155 Clarkelen	IVe	IIIe	---	3.0	---	1.5	---	4.0
156**:								
Clayburn	VIe	---	---	---	---	---	---	---
Moslander	Vw	---	---	---	---	---	---	---
157**:								
Coalmont	VIe	---	---	---	---	---	---	---
Milren	IVe	---	---	---	---	---	---	---
Cragosen	VIIs	---	---	---	---	---	---	---
158 Connerton	IVe	---	---	---	---	---	---	---
159 Copeman	IVe	IVe	---	2.0	---	1.0	---	2.5
160 Crago	VIIs	---	---	---	---	---	---	---
161**:								
Crago	VIIs	---	---	---	---	---	---	---
Pensore	VIIs	---	---	---	---	---	---	---
162 Cragosen	VIIs	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Pasture	
	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM*	AUM*
163**:								
Cragosen	VIIs	---	---	---	---	---	---	---
Chalkcreek	IVe	---	---	---	---	---	---	---
164**:								
Cragosen Variant	VIIs	---	---	---	---	---	---	---
Brownsto Variant	VIs	---	---	---	---	---	---	---
165 Curecanti	VIs	---	---	---	---	---	---	---
166 Curecanti Variant	VIe	---	---	---	---	---	---	---
167**:								
Cushman	IVe	---	---	---	---	---	---	---
Forkwood	IVe	---	---	---	---	---	---	---
168**:								
Cushool	IVe	---	---	---	---	---	---	---
Worfstone	VIIs	---	---	---	---	---	---	---
169**:								
Decross	VIe	---	---	---	---	---	---	---
Woosley	VIe	---	---	---	---	---	---	---
170**:								
Delphill	IVe	---	---	---	---	---	---	---
Blazon	VIIe	---	---	---	---	---	---	---
171**:								
Delplain	VIIs	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
172**:								
Diamondville	IVe	---	---	---	---	---	---	---
Worfman	VIIs	---	---	---	---	---	---	---
173 Docpar	IVe	IIIe	---	4.0	---	2.0	---	5.0
174 Draknab	IVe	IVs	---	2.0	---	1.0	---	2.5
175: Dune land.								
176**:								
Edlin	VIe	---	---	---	---	---	---	---
Rock River	IVe	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Pasture	
	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM*	AUM*
176**:								
Bosler	IVe	---	---	---	---	---	---	---
177**:								
Edlin	IVe	---	---	---	---	---	---	---
Ryan Park	IVe	---	---	---	---	---	---	---
178**:								
Effington	VIs	---	---	---	---	---	---	---
Uffens	VIs	---	---	---	---	---	---	---
179**:								
Enos	VIe	---	---	---	---	---	---	---
Wallson	VIe	---	---	---	---	---	---	---
180**:								
Farlow	VIIs	---	---	---	---	---	---	---
Starley	VIIs	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
181**:								
Farlow	VIIs	---	---	---	---	---	---	---
Starley	VIIs	---	---	---	---	---	---	---
182**:								
Fiveoh	IVe	---	---	---	---	---	---	---
Thermopolis	VIIe	---	---	---	---	---	---	---
183 Forelle	IVe	---	---	---	---	---	---	---
184**:								
Forelle	IVe	---	---	---	---	---	---	---
Diamondville	IVe	---	---	---	---	---	---	---
185**:								
Forelle	IVe	---	---	---	---	---	---	---
Lupinto	VIe	---	---	---	---	---	---	---
186**:								
Forkwood	IVe	---	---	---	---	---	---	---
Keyner	IVs	---	---	---	---	---	---	---
187**:								
Forkwood	IVe	---	---	---	---	---	---	---
Ulm	IVe	---	---	---	---	---	---	---
188**:								
Forkwood	IVe	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Pasture	
	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM*	AUM*
188**:								
Zigweid	IVe	---	---	---	---	---	---	---
189**:								
Gateridge	VIIe	---	---	---	---	---	---	---
Taluce Variant	VIIe	---	---	---	---	---	---	---
190 Griffy	VIe	---	---	---	---	---	---	---
191**:								
Griffy	VIe	---	---	---	---	---	---	---
Emblem	VIe	---	---	---	---	---	---	---
192**:								
Grimstone	VIe	---	---	---	---	---	---	---
Grimstone Variant	VIe	---	---	---	---	---	---	---
193 Haverdad	IVe	IIIe	---	4.0	---	2.0	---	5.0
194**:								
Haverdad	IVe	IIIe	---	4.0	---	2.0	---	5.0
Clarkelen	IVe	IIIe	---	3.0	---	1.5	---	4.0
195**:								
Haverdad	VIs	IVs	---	2.5	---	1.5	---	3.0
Clarkelen	VIs	IVs	---	2.0	---	1.0	---	2.5
196 Havermom	VIs	---	---	---	---	---	---	---
197 Hawkstone	IVe	---	---	---	---	---	---	---
198**:								
Hazton	VIIe	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
199 Hiland	IVe	---	---	---	---	---	---	---
200 Hiland	IVe	IIIe	---	4.0	---	2.0	---	5.0
201 Hiland	IVe	IIIe	---	5.0	---	2.5	---	6.0
202**:								
Inchau	VIe	---	---	---	---	---	---	---
Clayburn	VIe	---	---	---	---	---	---	---
Chittum	VIe	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Pasture	
	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM*	AUM*
203**:								
Inchau	VIe	---	---	---	---	---	---	---
Farlow	VIIs	---	---	---	---	---	---	---
204 Irson	VIIs	---	---	---	---	---	---	---
205**:								
Irson	VIIs	---	---	---	---	---	---	---
Kezar	VIe	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
206**:								
Irson	VIIe	---	---	---	---	---	---	---
Sebud	VIIe	---	---	---	---	---	---	---
207**:								
Keeline	IVe	---	---	---	---	---	---	---
Taluce	VIIe	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
208 Keyner	IVs	---	---	---	---	---	---	---
209**:								
Keyner	IVs	IVs	---	3.0	---	1.5	---	3.5
Absted	IVs	IVs	---	3.0	---	1.5	---	3.5
Slickspots	VIII	---	---	---	---	---	---	---
210**:								
Keyner	IVs	---	---	---	---	---	---	---
Hiland	IVe	---	---	---	---	---	---	---
211**:								
Kezar	VIe	---	---	---	---	---	---	---
Irson	VIIs	---	---	---	---	---	---	---
Clayburn	VIe	---	---	---	---	---	---	---
212 Lander	IVw	IVw	---	---	---	3.0	---	6.0
213**:								
Leavitt	VIe	---	---	---	---	---	---	---
Coutis	VIe	---	---	---	---	---	---	---
214**, 215**:								
Lolite	VIIe	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Pasture	
	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM*	AUM*
214**, 215**:								
Rock outcrop	VIII	---	---	---	---	---	---	---
216 Lonebear	IVe	---	---	---	---	---	---	---
217**:								
Lupinto	VIe	---	---	---	---	---	---	---
Alcova	IVe	---	---	---	---	---	---	---
218 Lupinto Family	VIe	---	---	---	---	---	---	---
219**:								
McFadden	VIe	---	---	---	---	---	---	---
Edlin	VIe	---	---	---	---	---	---	---
Blackhall	VIIe	---	---	---	---	---	---	---
220**:								
Middlewood	VIIe	---	---	---	---	---	---	---
Kather	VIe	---	---	---	---	---	---	---
221**:								
Milren	IVe	---	---	---	---	---	---	---
Bosler	IVe	---	---	---	---	---	---	---
Rock River	IVe	---	---	---	---	---	---	---
222**:								
Mudray	VIIs	---	---	---	---	---	---	---
Bributte	VIIe	---	---	---	---	---	---	---
Birdsley	VIIe	---	---	---	---	---	---	---
223**:								
Nathrop	VIIs	---	---	---	---	---	---	---
Starley	VIIs	---	---	---	---	---	---	---
224**:								
Neldore	VIIe	---	---	---	---	---	---	---
Moyerson	VIIe	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
225 Nunnston	IVe	---	---	---	---	---	---	---
226**:								
Oceanet	VIIe	---	---	---	---	---	---	---
Persayo	VIIe	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Pasture	
	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM*	AUM*
227**:								
Orella	VIIs	---	---	---	---	---	---	---
Cadoma	VIe	---	---	---	---	---	---	---
Petrie	VIs	---	---	---	---	---	---	---
228**:								
Orella	VIIs	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
229 Orpha	VIe	---	---	---	---	---	---	---
230**:								
Orpha	VIe	---	---	---	---	---	---	---
Tullock	VIIe	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
231**:								
Orpha	VIe	---	---	---	---	---	---	---
Vonalee	IVe	---	---	---	---	---	---	---
Roughlock	VIe	---	---	---	---	---	---	---
232**:								
Persayo	VIIe	---	---	---	---	---	---	---
Greybull	VIe	---	---	---	---	---	---	---
233**:								
Pesmore	VIIs	---	---	---	---	---	---	---
Asholler	VIIs	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
234 Petrie	VIs	---	---	---	---	---	---	---
235**:								
Petrie, wet	VIs	VIs	---	---	---	0.8	---	1.5
Zigweid, wet	VIs	VIs	---	---	---	0.5	---	0.5
236**:								
Petrie	VIs	---	---	---	---	---	---	---
Arvada	VIs	---	---	---	---	---	---	---
237**:								
Peyton	IVe	---	---	---	---	---	---	---
Holderness	IVe	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Pasture	
	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM*	AUM*
238:								
Pits and dumps.								
239**:								
Pokeman	IVe	---	---	---	---	---	---	---
Threetop	IVe	---	---	---	---	---	---	---
240**:								
Poposhia	IVe	---	---	---	---	---	---	---
Blazon	VIIs	---	---	---	---	---	---	---
241**:								
Rawlins	IVe	---	---	---	---	---	---	---
McFadden	IVe	---	---	---	---	---	---	---
Blackhall	VIIe	---	---	---	---	---	---	---
242**:								
Rawlins	IVe	---	---	---	---	---	---	---
Rock River	IVe	---	---	---	---	---	---	---
243**:								
Redsun	VIIs	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
244**:								
Redsun	VIIs	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
Redbow	IVe	---	---	---	---	---	---	---
245**:								
Rekop	VIIe	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
246**:								
Relsob	IVe	---	---	---	---	---	---	---
Peyton	IVe	---	---	---	---	---	---	---
247**:								
Rencot	VIIe	---	---	---	---	---	---	---
Blazon	VIIe	---	---	---	---	---	---	---
248**:								
Rencot	VIIs	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
249**:								
Rencot	VIIs	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Pasture	
	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM*	AUM*
249**:								
Duffson	VIe	---	---	---	---	---	---	---
250**:								
Rencot	VIIs	---	---	---	---	---	---	---
Thermopolis	VIIe	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
251 Rivra	VIs	---	---	---	---	---	---	---
252**:								
Rivra	VIs	---	---	---	---	---	---	---
Urban land.								
253 Rock outcrop	VIII	---	---	---	---	---	---	---
254**:								
Rock outcrop	VIII	---	---	---	---	---	---	---
Birdsley	VIIe	---	---	---	---	---	---	---
255**:								
Rock outcrop	VIII	---	---	---	---	---	---	---
Cathedral	VIIs	---	---	---	---	---	---	---
256**:								
Rock outcrop	VIII	---	---	---	---	---	---	---
Ustic Torriorthents	VIIe	---	---	---	---	---	---	---
Rubble land	VIII	---	---	---	---	---	---	---
257 Rock River	IVe	---	---	---	---	---	---	---
258**:								
Rock River	IVe	---	---	---	---	---	---	---
Hawkstone	IVe	---	---	---	---	---	---	---
259**:								
Rock River	IVe	---	---	---	---	---	---	---
Pinelli	IVe	---	---	---	---	---	---	---
Blazon	VIIe	---	---	---	---	---	---	---
260**:								
Rock River	IVe	---	---	---	---	---	---	---
Rawlins	VIe	---	---	---	---	---	---	---
Brownsto	VIe	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Pasture	
	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM*	AUM*
261**:								
Rock River	IVe	---	---	---	---	---	---	---
Ryan Park	IVe	---	---	---	---	---	---	---
McFadden	VIe	---	---	---	---	---	---	---
262**:								
Rock River	IVe	---	---	---	---	---	---	---
Worfman	VIIs	---	---	---	---	---	---	---
263**:								
Rock River	IVe	---	---	---	---	---	---	---
Ryan Park	IVe	---	---	---	---	---	---	---
Hawkstone	IVe	---	---	---	---	---	---	---
264 Roughlock	IVe	---	---	---	---	---	---	---
265**:								
Roughlock	IVe	---	---	---	---	---	---	---
Redbow	IVe	---	---	---	---	---	---	---
Redspear	VIe	---	---	---	---	---	---	---
266**:								
Roughlock	IVe	---	---	---	---	---	---	---
Buffcreek	VIs	---	---	---	---	---	---	---
267**:								
Rubble land	VIII	---	---	---	---	---	---	---
Ustic Torriorthents	VIIe	---	---	---	---	---	---	---
268 Ryan Park	IVe	---	---	---	---	---	---	---
269**:								
Ryan Park	IVe	---	---	---	---	---	---	---
Elk Mountain	IVe	---	---	---	---	---	---	---
270**:								
Saddle	VIe	---	---	---	---	---	---	---
Griffy	VIe	---	---	---	---	---	---	---
271:								
Salt flats	VIII	---	---	---	---	---	---	---
272 Samday	VIIe	---	---	---	---	---	---	---
273**:								
Savageton	IVe	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Pasture	
	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM*	AUM*
273**:								
Samday	VIIs	---	---	---	---	---	---	---
274**:								
Shingle	VIIe	---	---	---	---	---	---	---
Samday	VIIe	---	---	---	---	---	---	---
275**:								
Shingle	VIIe	---	---	---	---	---	---	---
Taluce	VIIe	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
276**:								
Shingle	VIIs	---	---	---	---	---	---	---
Theedle	IVe	---	---	---	---	---	---	---
277 Silhouette	IVe	IVe	---	3.5	---	2.0	---	5.0
278**:								
Silhouette	IVe	---	---	---	---	---	---	---
Petrie	VIs	---	---	---	---	---	---	---
279**:								
Starley	VIIs	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
280**:								
Stunner	IVe	---	---	---	---	---	---	---
Pinelli	IVe	---	---	---	---	---	---	---
281**:								
Sunup	VIIs	---	---	---	---	---	---	---
Kishona	VIe	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
282**:								
Terro	IVe	---	---	---	---	---	---	---
Vonalee	IVe	---	---	---	---	---	---	---
283**:								
Theedle	VIe	---	---	---	---	---	---	---
Shingle	VIIe	---	---	---	---	---	---	---
Kishona	VIe	---	---	---	---	---	---	---
284**:								
Threetop	IVe	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Pasture	
	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM*	AUM*
284**:								
Sunup	VIIs	---	---	---	---	---	---	---
Frontier	VIIs	---	---	---	---	---	---	---
285 Tisworth	VIs	---	---	---	---	---	---	---
286**:								
Travson	VIIe	---	---	---	---	---	---	---
Rock outcrop	VIII	---	---	---	---	---	---	---
287**:								
Typic Fluvaquents	VIw	---	---	---	---	---	---	---
Aquic Ustifluvents	VIs	---	---	---	---	---	---	---
288 Typic Haplaquolls	Vw	---	---	---	---	---	---	---
289 Typic Torrifluvents	VIs	---	---	---	---	---	---	---
290**:								
Uffens, thick surface	VIs	---	---	---	---	---	---	---
Uffens	VIs	---	---	---	---	---	---	---
291**:								
Uffens	VIs	---	---	---	---	---	---	---
Typic Torrifluvents		---	---	---	---	---	---	---
292 Ulm	IVe	IIIe	---	4.0	---	2.5	---	6.0
293**:								
Ulm	IVe	---	---	---	---	---	---	---
Absted	VIs	---	---	---	---	---	---	---
294 Ulrant	IVe	---	---	---	---	---	---	---
295**:								
Urban land.								
Clarkelen	IVe	---	---	---	---	---	---	---
296**:								
Urban land.								
Docpar	IVe	---	---	---	---	---	---	---
297**:								
Urban land.								
Savageton	VIe	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Pasture	
	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM*	AUM*
297**:								
Samday	VIIs	---	---	---	---	---	---	---
298**:								
Urban land.								
Silhouette	IVe	---	---	---	---	---	---	---
299**:								
Urban land.								
Theedle	IVe	---	---	---	---	---	---	---
Shingle	VIIs	---	---	---	---	---	---	---
300 Vonalee	IVe	---	---	---	---	---	---	---
301**:								
Vonalee	IVe	---	---	---	---	---	---	---
Hiland	IVe	---	---	---	---	---	---	---
302**:								
Vonalee	IVe	---	---	---	---	---	---	---
Slickspots	VIII	---	---	---	---	---	---	---
303 Whiteriver	IVe	---	---	---	---	---	---	---
304**:								
Woosley	VIe	---	---	---	---	---	---	---
Starley	VIIs	---	---	---	---	---	---	---
305**:								
Worf	VIIs	---	---	---	---	---	---	---
Bowbac	IVe	---	---	---	---	---	---	---
306**:								
Worf	VIIs	---	---	---	---	---	---	---
Briggsdale	IVe	---	---	---	---	---	---	---
307**:								
Worf Variant	VIIe	---	---	---	---	---	---	---
Cushman Variant	IVe	---	---	---	---	---	---	---
Peyton	IVe	---	---	---	---	---	---	---
308**:								
Worfstone	VIIe	---	---	---	---	---	---	---
McFadden	VIe	---	---	---	---	---	---	---
Lupinto	VIe	---	---	---	---	---	---	---

See footnotes at end of table.

TABLE 5.--LAND CAPABILITY CLASSES AND YIELDS PER ACRE OF CROPS AND PASTURE--Continued

Soil name and map symbol	Land capability		Alfalfa hay		Grass hay		Pasture	
	N	I	N	I	N	I	N	I
			Tons	Tons	Tons	Tons	AUM*	AUM*
309**:								
Zeomont	VIe	---	---	---	---	---	---	---
Ryan Park	IVe	---	---	---	---	---	---	---
310 Zigweid	IVe	---	---	---	---	---	---	---
311**:								
Zigweid	IVe	---	---	---	---	---	---	---
Theedle	IVe	---	---	---	---	---	---	---
312**:								
Zigweid	IVe	---	---	---	---	---	---	---
Urban land.								

* Animal unit month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL

(Absence of an entry indicates that the map unit component was not rated)

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
101 Absher	Slight	Slight.
102:		
Adel	Moderate: low adsorption.	Moderate: runoff.
Pagosa	Slight*	Moderate: runoff.
103:		
Alcova	Moderate: low adsorption.	Moderate: runoff.
Rock River	Moderate: low adsorption.	Moderate: runoff.
104:		
Alcova	Moderate: poor filter.	Moderate: runoff.
Stunner	Moderate: poor filter.	Moderate: runoff.
105:		
Alflack	Severe*: poor filter.	Moderate: runoff.
Foxton	Slight*	Moderate: runoff.
106:		
Alflack	Severe*: poor filter.	Moderate: runoff.
Irson	Slight*	Moderate: runoff.
Foxton Variant	Moderate*: low adsorption.	Moderate: runoff.
107 Almy	Slight	Moderate: runoff.
108 Amodac	Slight	Moderate: runoff.
109:		
Amodac	Slight	Moderate: runoff.
Keyner	Slight	Severe: runoff.
110 Aquic Ustifluvents	Severe: wetness.	Moderate: flooding.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
111:		
Aquic Ustifluvents	Severe: wetness.	Slight.
Orpha	Severe: poor filter.	Moderate: runoff.
112:		
Arvada	Slight	Slight.
Absted	Slight	Moderate: runoff.
Slickspots.		
113:		
Arvada	Slight	Slight.
Slickspots.		
114:		
Bachus	Slight*	Moderate: runoff.
Nathrop	Moderate*: low adsorption.	Moderate: runoff.
115:		
Bachus	Slight*	Moderate: runoff.
Clayburn	Slight	Moderate: runoff.
116:		
Bachus	Slight*	Moderate: runoff.
Pagosa	Slight*	Moderate: runoff.
117 Badland	Slight*	Moderate: runoff.
118:		
Badwater	Slight	Severe: runoff.
Rubble land	Moderate: low adsorption.	Moderate: runoff.
119:		
Barnum	Slight	Moderate: flooding.
Redbank	Slight	Moderate: flooding.
120 Bateson	Slight	Moderate: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
121 Bessemer	Slight	Moderate: runoff.
122 Bessemer	Slight	Moderate: runoff.
123:		
Bessemer	Slight	Moderate: runoff.
Urban land.		
124 Blackdraw	Slight	Severe: runoff.
125:		
Blackdraw	Slight	Severe: runoff.
Lolite	Slight*	Severe: runoff.
Gullied land.		
126:		
Blazon	Slight*	Severe: runoff.
Worfman	Slight*	Severe: runoff.
127:		
Blazon	Slight*	Severe: runoff.
Cragosen	Slight*	Severe: runoff.
Worfman	Slight*	Severe: runoff.
128:		
Boettcher	Slight*	Severe: runoff.
Brownsto	Slight	Severe: runoff.
129:		
Boettcher	Slight*	Moderate: runoff.
Pinelli	Slight	Moderate: runoff.
Worfman	Slight*	Severe: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
130:		
Bosler	Moderate: low adsorption, poor filter.	Moderate: runoff.
Alcova	Slight	Moderate: runoff.
131:		
Bosler	Severe: poor filter.	Moderate: runoff.
Hiland	Slight	Moderate: runoff.
132:		
Bowbac	Slight*	Moderate: runoff.
Hiland	Moderate: low adsorption.	Moderate: runoff.
133:		
Bowbac	Slight*	Moderate: runoff.
Hiland	Slight	Moderate: runoff.
Worf	Slight*	Severe: runoff.
134:		
Bowbac	Slight*	Moderate: runoff.
Taluce	Slight*	Moderate: runoff.
Terro	Slight*	Moderate: runoff.
135 Bridger	Moderate: low adsorption.	Moderate: runoff.
136:		
Brokenhorn	Slight	Severe: runoff.
Hyshot	Slight*	Severe: runoff.
137:		
Brownsto	Slight	Severe: runoff.
Lupinto	Slight	Moderate: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
138:		
Buffcreek	Moderate: low adsorption.	Moderate: runoff.
Redarrow	Slight*	Severe: runoff.
139:		
Cabin	Severe: poor filter.	Severe: runoff.
Herbman	Slight*	Severe: runoff.
140:		
Cadoma	Slight*	Severe: runoff.
Renohill	Slight*	Moderate: runoff.
Samday	Slight*	Severe: runoff.
141 Cambria	Slight	Moderate: runoff.
142:		
Cambria	Moderate: low adsorption.	Moderate: runoff.
Zigweid	Moderate: low adsorption.	Moderate: runoff.
143:		
Cambria	Moderate: low adsorption.	Moderate: runoff.
Zigweid	Slight	Moderate: runoff.
144:		
Castner	Slight*	Severe: runoff.
Chincap	Moderate*: low adsorption.	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.
145:		
Castner	Slight*	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.
146 Cavegulch	Moderate: low adsorption.	Moderate: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
147:		
Cavegulch	Slight	Moderate: runoff.
Brokenhorn	Slight	Severe: runoff.
148 Chalkcreek	Slight	Moderate: runoff.
149:		
Chipendale	Slight	Severe: runoff.
Chipenhill	Slight*	Severe: runoff.
150:		
Chipendale	Slight	Severe: runoff.
Razsun	Slight*	Severe: runoff.
151 Chipenhill	Slight*	Severe: runoff.
152:		
Chipenhill	Slight*	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.
153:		
Chittum	Slight*	Severe: runoff.
Nielsen	Slight*	Moderate: runoff.
Rock outcrop	Slight*	Moderate: runoff.
154:		
Chittum	Slight*	Severe: runoff.
Sneffels	Slight*	Moderate: runoff.
155 Clarkelen	Moderate: poor filter.	Moderate: runoff.
156:		
Clayburn	Moderate: low adsorption.	Moderate: runoff.
Moslander	Severe: wetness.	Severe: flooding.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
157:		
Coalmont	Slight*	Moderate: runoff.
Milren	Slight	Moderate: runoff.
Cragosen	Slight*	Severe: runoff.
158 Connerton	Moderate: low adsorption.	Slight.
159 Copeman	Moderate: low adsorption.	Moderate: runoff.
160 Crago	Moderate: low adsorption.	Moderate: runoff.
161:		
Crago	Slight	Severe: runoff.
Pensore	Slight*	Severe: runoff.
162 Cragosen	Slight*	Severe: runoff.
163:		
Cragosen	Slight*	Severe: runoff.
Chalkcreek	Slight	Moderate: runoff.
164:		
Cragosen Variant	Slight*	Moderate: runoff.
Brownsto Variant	Severe*: poor filter.	Severe: runoff.
165 Curecanti	Moderate: low adsorption.	Moderate: runoff.
166 Curecanti Variant	Slight*	Severe: runoff.
167:		
Cushman	Slight*	Moderate: runoff.
Forkwood	Slight	Moderate: runoff.
168:		
Cushool	Slight*	Moderate: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
168:		
Worfstone	Slight*	Moderate: runoff.
169:		
Decross	Moderate: low adsorption.	Moderate: runoff.
Woosley	Slight*	Moderate: runoff.
170:		
Delphill	Slight*	Moderate: runoff.
Blazon	Slight*	Severe: runoff.
171:		
Delplain	Slight*	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.
172:		
Diamondville	Slight*	Moderate: runoff.
Worfman	Slight*	Severe: runoff.
173 Docpar	Moderate: low adsorption.	Moderate: runoff.
174 Draknab	Severe: poor filter.	Slight.
175: Dune land.		
176:		
Edlin	Slight	Severe: runoff.
Rock River	Slight	Moderate: runoff.
Bosler	Severe: poor filter.	Moderate: runoff.
177:		
Edlin	Moderate: low adsorption.	Moderate: runoff.
Ryan Park	Moderate: low adsorption.	Moderate: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
178:		
Effington	Slight	Moderate: runoff.
Uffens	Moderate: low adsorption.	Moderate: runoff.
179:		
Enos	Slight*	Moderate: runoff.
Wallson	Moderate: low adsorption.	Moderate: runoff.
180:		
Farlow	Slight	Severe: runoff.
Starley	Slight*	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.
181:		
Farlow	Slight*	Severe: runoff.
Starley	Slight*	Severe: runoff.
182:		
Fiveoh	Slight	Moderate: runoff.
Thermopolis	Slight*	Severe: runoff.
183 Forelle	Slight	Moderate: runoff.
184:		
Forelle	Moderate: low adsorption.	Moderate: runoff.
Diamondville	Slight*	Moderate: runoff.
185:		
Forelle	Moderate: low adsorption.	Moderate: runoff.
Lupinto	Slight	Severe: runoff.
186:		
Forkwood	Slight	Moderate: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
186:		
Keyner	Slight	Severe: runoff.
187:		
Forkwood	Slight	Moderate: runoff.
Ulm	Slight	Slight.
188:		
Forkwood	Slight	Moderate: runoff.
Zigweid	Moderate: low adsorption.	Moderate: runoff.
189:		
Gateridge	Slight*	Severe: runoff.
Taluce Variant	Slight*	Severe: runoff.
190 Griffy	Moderate: low adsorption.	Moderate: runoff.
191:		
Griffy	Moderate: low adsorption.	Moderate: runoff.
Emblem	Moderate: low adsorption, poor filter.	Moderate: runoff.
192:		
Grimstone	Slight*	Severe: runoff.
Grimstone Variant	Slight*	Severe: runoff.
193 Haverdad	Slight	Moderate: runoff.
194:		
Haverdad	Moderate: low adsorption.	Slight.
Clarkelen	Slight	Slight.
195:		
Haverdad	Moderate: low adsorption.	Slight.
Clarkelen	Moderate: low adsorption.	Slight.
196 Havermom	Moderate: wetness.	Moderate: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
197 Hawkstone	Slight	Moderate: runoff.
198:		
Hazton	Slight*	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.
199 Hiland	Slight	Moderate: runoff.
200 Hiland	Severe: poor filter.	Moderate: runoff.
201 Hiland	Slight	Moderate: runoff.
202:		
Inchau	Moderate*: low adsorption.	Moderate: runoff.
Clayburn	Moderate: low adsorption.	Moderate: runoff.
Chittum	Slight*	Severe: runoff.
203:		
Inchau	Slight*	Severe: runoff.
Farlow	Slight*	Severe: runoff.
204 Irson	Slight*	Severe: runoff.
205:		
Irson	Slight*	Severe: runoff.
Kezar	Slight*	Moderate: runoff.
Rock outcrop	Slight*	Moderate: runoff.
206:		
Irson	Slight*	Severe: runoff.
Sebud	Slight	Severe: runoff.
207:		
Keeline	Moderate: low adsorption.	Moderate: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
207:		
Taluce	Slight*	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.
208 Keyner	Slight	Severe: runoff.
209:		
Keyner	Slight	Severe: runoff.
Absted	Slight	Moderate: runoff.
Slickspots.		
210:		
Keyner	Slight	Severe: runoff.
Hiland	Moderate: low adsorption.	Moderate: runoff.
211:		
Kezar	Slight*	Severe: runoff.
Irson	Slight*	Severe: runoff.
Clayburn	Moderate: low adsorption.	Moderate: runoff.
212 Lander	Severe: wetness.	Severe: flooding.
213:		
Leavitt	Slight	Severe: runoff.
Coutis	Slight	Moderate: runoff.
214:		
Lolite	Slight*	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.
215:		
Lolite	Slight*	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
216 Lonebear	Slight	Severe: runoff.
217:		
Lupinto	Slight*	Severe: runoff.
Alcova	Moderate: poor filter.	Moderate: runoff.
218 Lupinto Family	Severe: poor filter.	Severe: runoff.
219:		
McFadden	Slight	Severe: runoff.
Edlin	Slight	Severe: runoff.
Blackhall	Slight*	Severe: runoff.
220:		
Middlewood	Slight*	Severe: runoff.
Kather	Slight*	Moderate: runoff.
221:		
Milren	Slight	Moderate: runoff.
Bosler	Severe: poor filter.	Moderate: runoff.
Rock River	Moderate: low adsorption.	Moderate: runoff.
222:		
Mudray	Slight*	Severe: runoff.
Bributte	Slight*	Severe: runoff.
Birdsley	Slight*	Severe: runoff.
223:		
Nathrop	Slight*	Severe: runoff.
Starley	Slight*	Severe: runoff.
224:		
Neldore	Slight*	Severe: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
224:		
Moyerson	Slight*	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.
225 Nunnston	Slight	Moderate: runoff.
226:		
Oceanet	Slight*	Severe: runoff.
Persayo	Slight*	Severe: runoff.
227:		
Orella	Slight*	Severe: runoff.
Cadoma	Slight*	Severe: runoff.
Petrie	Slight	Severe: runoff.
228:		
Orella	Slight*	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.
229 Orpha	Severe: poor filter.	Moderate: runoff.
230:		
Orpha	Severe: poor filter.	Moderate: runoff.
Tullock	Severe*: poor filter.	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.
231:		
Orpha	Severe: poor filter.	Moderate: runoff.
Vonalee	Moderate: low adsorption.	Moderate: runoff.
Roughlock	Slight	Moderate: runoff.
232:		
Persayo	Slight*	Severe: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
232:		
Greybull	Slight*	Moderate: runoff.
233:		
Pesmore	Slight*	Severe: runoff.
Asholler	Slight*	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.
234 Petrie	Slight	Slight.
235:		
Petrie, wet	Severe: wetness.	Severe: flooding.
Zigweid, wet	Severe: wetness.	Severe: flooding.
236:		
Petrie	Slight	Severe: runoff.
Arvada	Slight	Severe: runoff.
237:		
Peyton	Slight	Moderate: runoff.
Holderness	Slight	Moderate: runoff.
238: Pits and dumps.		
239:		
Pokeman	Slight*	Moderate: runoff.
Threetop	Slight*	Moderate: runoff.
240:		
Poposhia	Slight	Moderate: runoff.
Blazon	Slight*	Severe: runoff.
241:		
Rawlins	Moderate: low adsorption.	Moderate: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
241:		
McFadden	Moderate: low adsorption.	Moderate: runoff.
Blackhall	Slight*	Severe: runoff.
242:		
Rawlins	Moderate: low adsorption.	Moderate: runoff.
Rock River	Moderate: low adsorption.	Moderate: runoff.
243:		
Redsun	Slight*	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.
244:		
Redsun	Slight*	Moderate: runoff.
Rock outcrop	Slight*	Moderate: runoff.
Redbow	Slight*	Moderate: runoff.
245:		
Rekop	Slight*	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.
246:		
Relsob	Severe: poor filter.	Moderate: runoff.
Peyton	Moderate: poor filter.	Slight.
247:		
Rencot	Slight*	Severe: runoff.
Blazon	Slight*	Severe: runoff.
248:		
Rencot	Slight*	Moderate: runoff.
Rock outcrop	Slight*	Moderate: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
249:		
Rencot	Slight*	Severe: runoff.
Duffson	Slight*	Moderate: runoff.
250:		
Rencot	Slight*	Moderate: runoff.
Thermopolis	Slight*	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.
251 Rivra	Severe: poor filter.	Moderate: runoff.
252:		
Rivra	Severe: poor filter.	Moderate: runoff.
Urban land.		
253 Rock outcrop	Slight*	Moderate: runoff.
254:		
Rock outcrop	Slight*	Moderate: runoff.
Birdsley	Slight*	Severe: runoff.
255:		
Rock outcrop	Slight*	Moderate: runoff.
Cathedral	Severe: poor filter.	Severe: runoff.
256:		
Rock outcrop	Slight*	Moderate: runoff.
Ustic Torriorthents	Slight	Moderate: runoff.
Rubble land	Moderate: low adsorption.	Moderate: runoff.
257 Rock River	Moderate: low adsorption.	Moderate: runoff.
258:		
Rock River	Moderate: low adsorption.	Moderate: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
258:		
Hawkstone	Moderate: low adsorption, poor filter.	Moderate: runoff.
259:		
Rock River	Moderate: low adsorption.	Moderate: runoff.
Pinelli	Slight	Moderate: runoff.
Blazon	Slight*	Severe: runoff.
260:		
Rock River	Slight	Moderate: runoff.
Rawlins	Slight	Severe: runoff.
Brownsto	Slight	Moderate: runoff.
261:		
Rock River	Moderate: low adsorption.	Moderate: runoff.
Ryan Park	Slight	Moderate: runoff.
McFadden	Slight	Severe: runoff.
262:		
Rock River	Slight	Moderate: runoff.
Worfman	Slight*	Severe: runoff.
263:		
Rock River	Moderate: low adsorption.	Moderate: runoff.
Ryan Park	Slight	Moderate: runoff.
Hawkstone	Moderate: low adsorption, poor filter.	Moderate: runoff.
264 Roughlock	Moderate: low adsorption.	Moderate: runoff.
265:		
Roughlock	Moderate*: low adsorption.	Moderate: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
265:		
Redbow	Slight*	Moderate: runoff.
Redspear	Slight*	Severe: runoff.
266:		
Roughlock	Slight	Moderate: runoff.
Buffcreek	Moderate: low adsorption.	Moderate: runoff.
267:		
Rubble land	Moderate: low adsorption.	Moderate: runoff.
Ustic Torriorthents	Slight	Severe: runoff.
268 Ryan Park	Slight	Moderate: runoff.
269:		
Ryan Park	Moderate: low adsorption.	Moderate: runoff.
Elk Mountain	Moderate*: low adsorption.	Moderate: runoff.
270:		
Saddle	Slight*	Moderate: runoff.
Griffy	Moderate: low adsorption.	Moderate: runoff.
271: Salt flats.		
272 Samday	Slight*	Severe: runoff.
273:		
Savageton	Slight*	Moderate: runoff.
Samday	Slight*	Moderate: runoff.
274:		
Shingle	Slight*	Severe: runoff.
Samday	Slight*	Severe: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
275:		
Shingle	Slight*	Severe: runoff.
Taluce	Slight*	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.
276:		
Shingle	Slight*	Severe: runoff.
Theedle	Slight*	Moderate: runoff.
277 Silhouette	Slight	Moderate: runoff.
278:		
Silhouette	Slight	Moderate: runoff.
Petrie	Slight	Severe: runoff.
279:		
Starley	Slight*	Moderate: runoff.
Rock outcrop	Slight*	Moderate: runoff.
280:		
Stunner	Slight	Moderate: runoff.
Pinelli	Slight	Moderate: runoff.
281:		
Sunup	Slight*	Severe: runoff.
Kishona	Slight	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.
282:		
Terro	Slight*	Moderate: runoff.
Vonalee	Moderate: low adsorption.	Moderate: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
283:		
Theedle	Slight*	Severe: runoff.
Shingle	Slight*	Severe: runoff.
Kishona	Slight	Moderate: runoff.
284:		
Threetop	Slight*	Moderate: runoff.
Sunup	Slight*	Moderate: runoff.
Frontier	Slight*	Moderate: runoff.
285 Tisworth	Slight	Moderate: runoff.
286:		
Travson	Slight*	Severe: runoff.
Rock outcrop	Slight*	Moderate: runoff.
287:		
Typic Fluvaquents	Severe: wetness.	Moderate: flooding.
Aquic Ustifluvents	Severe: wetness.	Slight.
288 Typic Haplaquolls	Severe: wetness.	Moderate: runoff.
289:		
Typic Torrifluvents.		
290:		
Uffens, thick surface	Moderate: low adsorption.	Moderate: runoff.
Uffens	Moderate: low adsorption.	Slight.
291:		
Uffens	Moderate: low adsorption.	Slight.
Typic Torrifluvents.		
292 Ulm	Slight	Moderate: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
293:		
Ulm	Slight	Moderate: runoff.
Absted	Slight	Moderate: runoff.
294 Ulrant	Moderate*: low adsorption.	Moderate: runoff.
295:		
Urban land.		
Clarkelen	Moderate: low adsorption, poor filter.	Moderate: runoff.
296:		
Urban land.		
Docpar	Slight	Moderate: runoff.
297:		
Urban land.		
Savageton	Slight*	Moderate: runoff.
Samday	Slight*	Severe: runoff.
298:		
Urban land.		
Silhouette	Slight	Moderate: runoff.
299:		
Urban land.		
Theedle	Slight*	Moderate: runoff.
Shingle	Slight*	Severe: runoff.
300 Vonalee	Moderate: low adsorption.	Moderate: runoff.
301:		
Vonalee	Moderate: low adsorption.	Moderate: runoff.
Hiland	Slight	Moderate: runoff.
302:		
Vonalee	Slight	Moderate: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
302: Slickspots.		
303 Whiteriver	Slight	Moderate: runoff.
304: Woosley	Slight*	Moderate: runoff.
Starley	Slight*	Severe: runoff.
305: Worf	Slight*	Severe: runoff.
Bowbac	Slight*	Moderate: runoff.
306: Worf	Slight*	Severe: runoff.
Briggsdale	Slight*	Moderate: runoff.
307: Worf Variant	Slight*	Moderate: runoff.
Cushman Variant	Slight*	Moderate: runoff.
Peyton	Slight	Moderate: runoff.
308: Worfstone	Slight*	Severe: runoff.
McFadden	Moderate: low adsorption.	Moderate: runoff.
Lupinto	Moderate: low adsorption.	Moderate: runoff.
309: Zeomont	Severe: poor filter.	Moderate: runoff.
Ryan Park	Moderate: low adsorption.	Moderate: runoff.
310 Zigweid	Moderate: low adsorption.	Moderate: runoff.
311: Zigweid	Moderate: low adsorption.	Moderate: runoff.

See footnote at end of table.

TABLE 6.--SOIL-PESTICIDE LOSS POTENTIAL--Continued

Soil name and map symbol	Pesticide loss potential--leaching	Pesticide loss potential--runoff
311:		
Theedle	Slight*	Moderate: runoff.
312:		
Zigweid	Slight	Moderate: runoff.
Urban land.		

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* Bedrock permeability criteria were not evaluated because data were not available.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES

(Only the soils that support rangeland vegetation suitable for grazing are listed)

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
101 Absher	Saline Lowland, 10-14 High Plains, Southeast.	Favorable	2,500	Alkali sacaton	30
		Normal	1,800	Basin wildrye	20
		Unfavorable	1,200	Western wheatgrass	15
				Black greasewood	15
				Inland saltgrass	5
				Nuttall alkaligrass	5
102*:					
Adel	Loamy, 15-19 Foothills And Mountains, Southeast.	Favorable	2,000	Bluebunch wheatgrass	20
		Normal	1,500	Idaho fescue	20
		Unfavorable	800	Prairie junegrass	10
				Griffith wheatgrass	10
				Columbia needlegrass	5
				Big sagebrush	5
Pagosa.					
103*:					
Alcova	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	25
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	10
				Threadleaf sedge	10
				Silver sagebrush	5
				Bluebunch wheatgrass	5
				Prairie junegrass	5
Rock River	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Silver sagebrush	10
				Threadleaf sedge	10
				Bluebunch wheatgrass	5
				Bottlebrush squirreltail	5
104*:					
Alcova	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Big sagebrush	10
				Bluebunch wheatgrass	10
				Green needlegrass	5
				Mutton bluegrass	5
Stunner	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
106*: Alflack.					

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
106*:					
Irson	Shallow Igneous, 15-19 Foothills And Mountains, Southeast	Favorable	1,200	Bluebunch wheatgrass	25
		Normal	900	Slimstem muhly	15
		Unfavorable	600	Threetip sagebrush	15
				Idaho fescue	5
				Western wheatgrass	5
Foxton Variant.					
107 Almy	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Big sagebrush	10
				Bluebunch wheatgrass	10
				Indian ricegrass	5
				Low rabbitbrush	5
				Mutton bluegrass	5
108 Amodac	Saline Loamy, 10-14 High Plains, Southeast.	Favorable	900	Western wheatgrass	30
		Normal	700	Birdfoot sagebrush	15
		Unfavorable	500	Needleandthread	15
				Prairie junegrass	10
				Bluebunch wheatgrass	10
				Sandberg bluegrass	5
				Threadleaf sedge	5
				Gardner saltbush	5
109*:					
Amodac	Saline Loamy, 10-14 High Plains, Southeast.	Favorable	900	Western wheatgrass	30
		Normal	700	Birdfoot sagebrush	15
		Unfavorable	500	Needleandthread	15
				Prairie junegrass	10
				Bluebunch wheatgrass	10
				Sandberg bluegrass	5
				Threadleaf sedge	5
				Gardner saltbush	5
Keyner	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Mutton bluegrass	5
				Green needlegrass	5
110 Aquic Ustifluvents	Saline Subirrigated, 10-14 High Plains, Southeast.	Favorable	3,400	Alkali sacaton	40
		Normal	3,000	Basin wildrye	20
		Unfavorable	2,500	Alkali bluegrass	10
				Greasewood	5
111*:					
Aquic Ustifluvents	Saline Subirrigated, 10-14 Northern Plains.	Favorable	3,500	Alkali sacaton	50
		Normal	3,000	Inland saltgrass	10
		Unfavorable	2,500	Nuttals alkaligrass	5
Orpha	Sands, 10-14 Northern Plains	Favorable	1,700	Prairie sandreed	50
		Normal	1,400	Sand bluestem	25
		Unfavorable	900	Needleandthread	15
				Indian ricegrass	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
112*:					
Arvada	Impervious Clay, 10-14 High Plains, Southeast.	Favorable	700	Western wheatgrass	25
		Normal	500	Birdfoot sagebrush	25
		Unfavorable	350	Bottlebrush squirreltail	10
				Gardner saltbush	10
				Indian ricegrass	10
Absted	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	35
		Normal	1,100	Big sagebrush	10
		Unfavorable	600	Needleandthread	15
				Green needlegrass	10
				Blue grama	5
				Mutton bluegrass	5
Slickspots.					
113*:					
Arvada	Saline Lowland, 5-9 Wind River Basin.	Favorable	1,600	Alkali sacaton	20
		Normal	1,200	Greasewood	15
		Unfavorable	700	Basin wildrye	15
				Western wheatgrass	10
				Bottlebrush squirreltail	5
				Inland saltgrass	5
Slickspots.					
114*:					
Bachus	Loamy, 15-19 Foothills And Mountains, East.	Favorable	1,600	Columbia needlegrass	15
		Normal	1,350	Idaho fescue	15
		Unfavorable	1,100	Spike fescue	15
				Thickspike wheatgrass	10
				Big sagebrush	10
				Mountain brome	10
				Bluebunch wheatgrass	10
				Snowberry	5
Nathrop	Shallow Loamy, 15-19 Foothills And Mountains, East.	Favorable	1,000	Columbia needlegrass	15
		Normal	850	Idaho fescue	15
		Unfavorable	500	Spike fescue	15
				Bluebunch wheatgrass	10
				Big sagebrush	10
				Prairie junegrass	5
				Western wheatgrass	5
115*:					
Bachus	Loamy, 15-19 Foothills And Mountains, East.	Favorable	1,600	Columbia needlegrass	15
		Normal	1,350	Idaho fescue	15
		Unfavorable	1,100	Spike fescue	15
				Thickspike wheatgrass	10
				Big sagebrush	10
				Mountain brome	10
				Bluebunch wheatgrass	10
				Snowberry	5
Clayburn	Loamy, 15-19 Foothills And Mountains, East.	Favorable	1,600	Columbia needlegrass	15
		Normal	1,350	Spike fescue	15
		Unfavorable	1,100	Idaho fescue	15
				Bluebunch wheatgrass	10
				Big sagebrush	10

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
116*:					
Bachus	Loamy, 15-19 Foothills And Mountains, East.	Favorable	1,600	Columbia needlegrass	15
		Normal	1,350	Idaho fescue	15
		Unfavorable	1,100	Spike fescue	15
				Thickspike wheatgrass	10
				Big sagebrush	10
				Mountain brome	10
				Bluebunch wheatgrass	10
				Snowberry	5
Pagosa.					
118*:					
Badwater	Coarse Upland, 15-19 Foothills And Mountains, East.	Favorable	1,100	Columbia needlegrass	20
		Normal	950	Idaho fescue	20
		Unfavorable	600	Bluebunch wheatgrass	10
				Spike fescue	10
				Prairie junegrass	10
				Western wheatgrass	10
				Big sagebrush	5
				Lupine	5
Rubble land.					
119*:					
Barnum	Lowland, 10-14 Northern Plains	Favorable	3,000	Western wheatgrass	30
		Normal	2,500	Basin wildrye	20
		Unfavorable	2,000	Green needlegrass	15
				Blue grama	5
				Canby bluegrass	5
				Needleandthread	5
				Silver sagebrush	5
Redbank	Lowland, 10-14 Northern Plains	Favorable	3,000	Western wheatgrass	30
		Normal	2,500	Basin wildrye	20
		Unfavorable	2,000	Green needlegrass	15
				Blue grama	5
				Canby bluegrass	5
				Needleandthread	5
				Silver sagebrush	5
120 Bateson	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	35
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Big sagebrush	15
				Bluebunch wheatgrass	10
				Green needlegrass	5
				Mutton bluegrass	5
121 Bessemer	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	20
		Unfavorable	600	Big sagebrush	10
				Blue grama	5
				Prairie junegrass	5
				Sandberg bluegrass	5
122 Bessemer	Clayey, 10-14 High Plains, Southeast.	Favorable	1,300	Bluebunch wheatgrass	5
		Normal	1,000	Green needlegrass	5
		Unfavorable	500	Birdfoot sagebrush	10
				Bottlebrush squirreltail	10
				Thickspike wheatgrass	40

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
124 Blackdraw	Saline Upland, 10-14 High Plains, Southeast.	Favorable	650	Gardner saltbush	40
		Normal	500	Western wheatgrass	20
		Unfavorable	300	Indian ricegrass	10
				Bottlebrush squirreltail	10
				Sandberg bluegrass	5
				Birdfoot sagebrush	5
125*:					
Blackdraw	Saline Upland, 10-14 High Plains, Southeast.	Favorable	650	Gardner saltbush	40
		Normal	500	Western wheatgrass	20
		Unfavorable	300	Indian ricegrass	10
				Bottlebrush squirreltail	10
				Sandberg bluegrass	5
				Birdfoot sagebrush	5
Lolite	Shale, 10-14 High Plains, Southeast.	Favorable	400	Western wheatgrass	30
		Normal	300	Gardner saltbush	15
		Unfavorable	200	Indian ricegrass	10
				Bottlebrush squirreltail	10
				Inland saltgrass	10
				Bluebunch wheatgrass	5
				Sandberg bluegrass	5
				Birdfoot sagebrush	5
Gullied land.					
126*:					
Blazon	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
				Fringed sagewort	5
Worfman	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
				Fringed sagewort	5
127*:					
Blazon	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
				Fringed sagewort	5
Cragosen	Very Shallow, 10-14 High Plains, Southeast.	Favorable	600	Bluebunch wheatgrass	45
		Normal	450	Western wheatgrass	10
		Unfavorable	250	Bottlebrush squirreltail	10
				Indian ricegrass	5
				Needleandthread	5
				Black sagebrush	5
				Juniper	5
				Antelope bitterbrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
127*:					
Worfman	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
				Fringed sagewort	5
128*:					
Boettcher	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
				Fringed sagewort	5
Brownsto	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
129*:					
Boettcher	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
				Douglas rabbitbrush	5
Pinelli	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
Worfman	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
				Fringed sagewort	5
130*:					
Bosler	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Big sagebrush	10
		Unfavorable	600	Needleandthread	15
				Bluebunch wheatgrass	10
				Green needlegrass	5
				Mutton bluegrass	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
130*:					
Alcova------------	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass------------	30
		Normal	1,100	Needleandthread---------------	15
		Unfavorable	600	Big sagebrush-----------------	10
				Bluebunch wheatgrass----------	10
				Green needlegrass-------------	5
				Needleleaf sedge--------------	5
				Prairie junegrass-------------	5
				Mutton bluegrass--------------	5
				Indian ricegrass--------------	5
				Threadleaf sedge--------------	5
131*:					
Bosler------------	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass------------	30
		Normal	1,100	Big sagebrush-----------------	10
		Unfavorable	600	Needleandthread---------------	15
				Bluebunch wheatgrass----------	10
				Green needlegrass-------------	5
				Mutton bluegrass--------------	5
Hiland------------	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass------------	30
		Normal	1,100	Needleandthread---------------	15
		Unfavorable	600	Bluebunch wheatgrass----------	10
				Big sagebrush-----------------	10
				Threadleaf sedge--------------	5
				Green needlegrass-------------	5
				Mutton bluegrass--------------	5
132*:					
Bowbac------------	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass------------	30
		Normal	1,100	Needleandthread---------------	15
		Unfavorable	600	Bluebunch wheatgrass----------	10
				Big sagebrush-----------------	10
				Green needlegrass-------------	5
				Mutton bluegrass--------------	5
				Douglas rabbitbrush-----------	5
Hiland------------	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass------------	30
		Normal	1,100	Needleandthread---------------	15
		Unfavorable	600	Bluebunch wheatgrass----------	10
				Big sagebrush-----------------	10
				Threadleaf sedge--------------	5
				Green needlegrass-------------	5
				Mutton bluegrass--------------	5
133*:					
Bowbac------------	Sandy, 10-14 Northern Plains	Favorable	1,600	Needleandthread---------------	25
		Normal	1,300	Prairie sandreed--------------	20
		Unfavorable	750	Indian ricegrass--------------	15
				Threadleaf sedge--------------	5
				Silver sagebrush--------------	5
Hiland------------	Sandy, 10-14 Northern Plains	Favorable	1,600	Needleandthread---------------	25
		Normal	1,300	Prairie sandreed--------------	20
		Unfavorable	750	Indian ricegrass--------------	15
				Threadleaf sedge--------------	5
				Silver sagebrush--------------	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
133*:					
Worf	Shallow Sandy, 10-14 Northern Plains.	Favorable	1,300	Needleandthread	25
		Normal	1,000	Prairie sandreed	15
		Unfavorable	600	Indian ricegrass	10
				Threadleaf sedge	10
				Little bluestem	10
134*:					
Bowbac	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
				Douglas rabbitbrush	5
Taluce	Shallow Sandy, 10-14 High Plains, Southeast.	Favorable	1,200	Needleandthread	25
		Normal	900	Bluebunch wheatgrass	20
		Unfavorable	700	Indian ricegrass	10
				Mutton bluegrass	10
				Threadleaf sedge	10
				Black sagebrush	5
Terro	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Threadleaf sedge	10
				Silver sagebrush	10
				Bottlebrush squirreltail	5
135 Bridger	Loamy, 15-19 Foothills And Mountains, Southeast.	Favorable	2,000	Bluebunch wheatgrass	20
		Normal	1,500	Idaho fescue	20
		Unfavorable	800	Prairie junegrass	10
				Griffith wheatgrass	10
				Big sagebrush	5
136*:					
Brokenhorn	Clayey, 10-14 Northern Plains	Favorable	1,400	Western wheatgrass	40
		Normal	1,000	Green needlegrass	40
		Unfavorable	600	Big sagebrush	10
				Blue grama	10
				Cusick bluegrass	5
				Winterfat	5
Hyshot	Clayey, 10-14 Northern Plains	Favorable	1,400	Green needlegrass	30
		Normal	1,000	Western wheatgrass	25
		Unfavorable	600	Blue grama	10
				Big sagebrush	10
				Cusick bluegrass	5
				Winterfat	5
137*:					
Brownsto	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
137*:					
Lupinto	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	25
		Normal	900	Western wheatgrass	15
		Unfavorable	700	Needleandthread	10
				Black sagebrush	10
				Mutton bluegrass	10
				Big sagebrush	5
				Indian ricegrass	5
				Prairie junegrass	5
138*:					
Buffcreek	Shallow Loamy, 10-14 Northern Plains.	Favorable	1,200	Bluebunch wheatgrass	35
		Normal	900	Western wheatgrass	15
		Unfavorable	450	Needleandthread	10
				Threadleaf sedge	10
				Sandberg bluegrass	5
				Indian ricegrass	5
				Prairie junegrass	5
				Big sagebrush	5
				Black sagebrush	5
Redarrow	Shallow Loamy, 10-14 Northern Plains.	Favorable	1,200	Bluebunch wheatgrass	35
		Normal	900	Western wheatgrass	15
		Unfavorable	450	Needleandthread	10
				Threadleaf sedge	10
				Blue grama	5
				Prairie junegrass	5
				Phlox	5
				Big sagebrush	5
				Black sagebrush	5
139*:					
Cabin	Shallow Igneous, 15-19 Foothills And Mountains, East.	Favorable	950	Columbia needlegrass	20
		Normal	800	Idaho fescue	20
		Unfavorable	450	Bluebunch wheatgrass	10
				Black sagebrush	10
				Western wheatgrass	5
Herbman	Igneous, 15-19 Foothills And Mountains, East.	Favorable	800	Bluebunch wheatgrass	20
		Normal	600	Spike fescue	10
		Unfavorable	400	Idaho fescue	10
				Western wheatgrass	10
				Black sagebrush	5
140*:					
Cadoma	Impervious Clay, 10-14 High Plains, Southeast.	Favorable	700	Birdfoot sagebrush	30
		Normal	500	Western wheatgrass	25
		Unfavorable	350	Gardner saltbush	10
				Indian ricegrass	10
				Bottlebrush squirreltail	10
Renohill	Clayey, 10-14 High Plains, Southeast.	Favorable	1,300	Thickspike wheatgrass	40
		Normal	1,100	Green needlegrass	20
		Unfavorable	500	Bluebunch wheatgrass	5
				Bottlebrush squirreltail	5
				Birdfoot sagebrush	5
				Big sagebrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
140*					
Samday	Shale, 10-14 High Plains, Southeast.	Favorable	400	Western wheatgrass	40
		Normal	300	Gardner saltbush	15
		Unfavorable	200	Indian ricegrass	10
				Bottlebrush squirreltail	10
				Inland saltgrass	10
				Birdfoot sagebrush	5
141 Cambria	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Big sagebrush	10
				Bluebunch wheatgrass	10
				Green needlegrass	5
				Mutton bluegrass	5
142*:					
Cambria	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Big sagebrush	10
				Bluebunch wheatgrass	10
				Green needlegrass	5
				Mutton bluegrass	5
Zigweid	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
143*:					
Cambria	Loamy, 5-9 Wind River Basin	Favorable	600	Western wheatgrass	30
		Normal	400	Big sagebrush	15
		Unfavorable	225	Needleandthread	10
				Bluebunch wheatgrass	5
				Indian ricegrass	5
Zigweid	Loamy, 5-9 Wind River Basin	Favorable	600	Western wheatgrass	30
		Normal	400	Big sagebrush	15
		Unfavorable	225	Needleandthread	10
				Indian ricegrass	10
				Bluebunch wheatgrass	5
144*:					
Castner	Shallow Loamy, 15-19 Foothills And Mountains, Southeast.	Favorable	1,400	Bluebunch wheatgrass	30
		Normal	1,100	Griffith wheatgrass	5
		Unfavorable	800	Columbia needlegrass	5
				Parry danthonia	5
				Mountain muhly	5
				Idaho fescue	5
				Black sagebrush	5
Chincap	Loamy, 15-19 Foothills And Mountains, Southeast.	Favorable	2,000	Bluebunch wheatgrass	20
		Normal	1,500	Idaho fescue	20
		Unfavorable	800	Prairie junegrass	10
				Needleandthread	5
				Columbia needlegrass	5
				Big sagebrush	5
				Low rabbitbrush	5
				Fringed sagewort	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
144* Rock outcrop.					
145*: Castner	Rocky Hills, 15-19 Foothills And Mountains, Southeast.	Favorable	1,150	True mountainmahogany	30
		Normal	900	Bluebunch wheatgrass	20
		Unfavorable	550	Needleandthread	15
				Spike fescue	15
				Antelope bitterbrush	10
Rock outcrop.					
146 Cavegulch	Saline Upland, 10-14 High Plains, Southeast.	Favorable	650	Gardner saltbush	40
		Normal	500	Western wheatgrass	25
		Unfavorable	300	Indian ricegrass	15
				Winterfat	5
				Birdfoot sagebrush	5
147*: Cavegulch	Saline Upland, 10-14 High Plains, Southeast.	Favorable	650	Gardner saltbush	40
		Normal	500	Western wheatgrass	25
		Unfavorable	300	Indian ricegrass	15
				Winterfat	5
				Birdfoot sagebrush	5
Brokenhorn	Clayey, 10-14 High Plains, Southeast.	Favorable	1,300	Western wheatgrass	40
		Normal	1,000	Green needlegrass	25
		Unfavorable	500	Birdfoot sagebrush	10
				Blue grama	5
				Winterfat	5
148 Chalkcreek	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	20
		Unfavorable	600	Bluebunch wheatgrass	10
				Mutton bluegrass	10
				Big sagebrush	10
				Indian ricegrass	5
				Prairie junegrass	5
149*: Chipendale	Saline Upland, 10-14 High Plains, Southeast.	Favorable	650	Gardner saltbush	40
		Normal	500	Western wheatgrass	25
		Unfavorable	300	Indian ricegrass	10
				Bottlebrush squirreltail	10
				Winterfat	5
				Birdfoot sagebrush	5
Chipenhill	Shale, 10-14 High Plains, Southeast.	Favorable	400	Western wheatgrass	30
		Normal	300	Indian ricegrass	10
		Unfavorable	200	Bottlebrush squirreltail	10
				Gardner saltbush	10
				Bluebunch wheatgrass	5
				Birdfoot sagebrush	5
				Winterfat	5
150*: Chipendale	Saline Upland, 10-14 Northern Plains.	Favorable	650	Western wheatgrass	10
		Normal	500	Inland saltgrass	10
		Unfavorable	250	Alkali sacaton	10
				Sandberg bluegrass	10

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
150*:					
Razsun	Clayey, 10-14 Northern Plains	Favorable	1,800	Western wheatgrass	35
		Normal	1,300	Green needlegrass	25
		Unfavorable	750	Blue grama	5
				Cusick bluegrass	5
				Prairie junegrass	5
				Lomatium	5
				Big sagebrush	5
151 Chipenhill	Shallow Loamy, 5-9 Wind River Basin.	Favorable	350	Western wheatgrass	20
		Normal	250	Bluebunch wheatgrass	15
		Unfavorable	125	Indian ricegrass	15
				Big sagebrush	10
				Needleandthread	5
152*:					
Chipenhill	Shale, 10-14 High Plains, Southeast.	Favorable	400	Western wheatgrass	30
		Normal	300	Indian ricegrass	10
		Unfavorable	200	Bottlebrush squirreltail	10
				Gardner saltbush	10
				Bluebunch wheatgrass	5
				Birdfoot sagebrush	5
				Winterfat	5
Rock outcrop.					
153*:					
Chittum	Shallow Loamy, 15-19 Foothills And Mountains, East.	Favorable	1,000	Columbia needlegrass	15
		Normal	850	Idaho fescue	15
		Unfavorable	500	Spike fescue	15
				Bluebunch wheatgrass	10
				Big sagebrush	5
				Black sagebrush	5
				Mountain brome	5
				Prairie junegrass	5
				Sandberg bluegrass	5
				Slender wheatgrass	5
				Western wheatgrass	5
Nielsen	Very Shallow, 15-19 Foothills And Mountains, East.	Favorable	800	Columbia needlegrass	15
		Normal	600	Bluebunch wheatgrass	15
		Unfavorable	400	Idaho fescue	10
				Big sagebrush	10
				Western wheatgrass	5
Rock outcrop.					
154*:					
Chittum	Shallow Loamy, 15-19 Foothills And Mountains, Se.	Favorable	1,400	Bluebunch wheatgrass	30
		Normal	1,100	Black sagebrush	10
		Unfavorable	800	Columbia needlegrass	10
				Idaho fescue	10
				Parry danthonia	10
				Prairie junegrass	5
				Sandberg bluegrass	5
				Spike fescue	5
				Mountain muhly	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
154*:					
Sneffels	Loamy, 15-19 Foothills And Mountains, Southeast.	Favorable	2,000	Bluebunch wheatgrass	20
		Normal	1,500	Idaho fescue	20
		Unfavorable	800	Prairie junegrass	10
				Griffith wheatgrass	10
				Big sagebrush	5
				Threetip sagebrush	5
155 Clarkelen	Sandy, 10-14 Northern Plains	Favorable	2,100	Needleandthread	25
		Normal	1,600	Prairie sandreed	20
		Unfavorable	1,000	Indian ricegrass	15
				Silver sagebrush	10
156*:					
Clayburn	Loamy, 15-19 Foothills And Mountains, East.	Favorable	1,600	Columbia needlegrass	15
		Normal	1,350	Spike fescue	15
		Unfavorable	1,100	Idaho fescue	15
				Bluebunch wheatgrass	10
				Big sagebrush	10
Moslander	Subirrigated, 15-19 Foothills And Mountains, East.	Favorable	4,600	Nebraska sedge	20
		Normal	3,800	Tufted hairgrass	15
		Unfavorable	3,000	Northern reedgrass	10
				Alpine timothy	10
				Willow	5
157*:					
Coalmont	Clayey, 10-14 High Plains, Southeast.	Favorable	1,300	Thickspike wheatgrass	40
		Normal	1,000	Green needlegrass	20
		Unfavorable	500	Birdfoot sagebrush	10
				Bluebunch wheatgrass	5
				Blue grama	5
Milren	Clayey, 10-14 High Plains, Southeast.	Favorable	1,300	Thickspike wheatgrass	40
		Normal	1,000	Green needlegrass	20
		Unfavorable	500	Birdfoot sagebrush	10
				Bluebunch wheatgrass	5
				Bottlebrush squirreltail	5
Cragosen	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Needleandthread	10
				Mutton bluegrass	10
				Black sagebrush	10
				Indian ricegrass	5
158 Connerton	Loamy, 10-14 Northern Plains	Favorable	1,500	Western wheatgrass	25
		Normal	1,200	Needleandthread	25
		Unfavorable	700	Blue grama	15
				Green needlegrass	15
				Big sagebrush	5
159 Copeman	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Big sagebrush	10
				Bluebunch wheatgrass	10
				Mutton bluegrass	5
				Green needlegrass	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
160 Crago	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
161*:					
Crago	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
Pensore	Very Shallow, 10-14 Hign Plains, Southeast.	Favorable	600	Bluebunch wheatgrass	50
		Normal	450	Western wheatgrass	10
		Unfavorable	250	Mountainmahogany	5
				Black sagebrush	5
				Juniper	5
162 Cragosen	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Needleandthread	10
				Mutton bluegrass	10
				Black sagebrush	10
				Indian ricegrass	5
163*:					
Cragosen	Very Shallow, 10-14 High Plains, Southeast.	Favorable	600	Bluebunch wheatgrass	45
		Normal	450	Western wheatgrass	10
		Unfavorable	250	Bottlebrush squirreltail	10
				Indian ricegrass	5
				Needleandthread	5
				Black sagebrush	5
				Mountainmahogany	5
				Antelope bitterbrush	5
Chalkcreek	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	20
		Unfavorable	600	Bluebunch wheatgrass	10
				Mutton bluegrass	10
				Big sagebrush	10
				Indian ricegrass	5
				Prairie junegrass	5
164*:					
Cragosen Variant	Very Shallow, 10-14 High Plains, Southeast.	Favorable	600	Bluebunch wheatgrass	50
		Normal	450	Bottlebrush squirreltail	10
		Unfavorable	250	Western wheatgrass	10
				Indian ricegrass	5
				Needleandthread	5
				Threadleaf sedge	5
				Black sagebrush	5
Brownsto Variant	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	25
		Normal	900	Indian ricegrass	10
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Threadleaf sedge	10
				Black sagebrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
165 Curecanti	Coarse Upland, 10-14 High Plains, Southeast.	Favorable	1,400	Bluebunch wheatgrass	20
		Normal	1,000	Little bluestem	10
		Unfavorable	600	Western wheatgrass	10
				Black sagebrush	10
				Mountain muhly	5
				Mutton bluegrass	5
				Prairie junegrass	5
				Serviceberry	5
166 Curecanti Variant	Coarse Upland, 15-19 Foothills And Mountains, Southeast.	Favorable	1,700	Bluebunch wheatgrass	30
		Normal	1,300	Idaho fescue	20
		Unfavorable	800	Western wheatgrass	10
				Prairie junegrass	10
				Canby bluegrass	5
				Columbia needlegrass	5
				Threetip sagebrush	5
167*:					
Cushman	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Big sagebrush	10
				Bluebunch wheatgrass	10
				Green needlegrass	5
				Low rabbitbrush	5
				Mutton bluegrass	5
Forkwood	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
168*:					
Cushool	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	25
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	20
				Silver sagebrush	10
				Bluebunch wheatgrass	5
				Sandberg bluegrass	5
Worfstone	Very Shallow, 10-14 High Plains, Southeast.	Favorable	600	Bluebunch wheatgrass	40
		Normal	450	Western wheatgrass	10
		Unfavorable	250	Bottlebrush squirreltail	10
				Indian ricegrass	10
				Canby bluegrass	5
				Needleandthread	5
				Prairie junegrass	5
				Threadleaf sedge	5
				Black sagebrush	5
169*:					
Decross	Loamy, 15-19 Foothills And Mountains, East.	Favorable	1,600	Columbia needlegrass	15
		Normal	1,350	Idaho fescue	15
		Unfavorable	1,100	Spike fescue	15
				Big sagebrush	10
				Bluebunch wheatgrass	10
				Western wheatgrass	10

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
169*:					
Woosley	Loamy, 15-19 Foothills And Mountains, East.	Favorable	1,600	Columbia needlegrass	15
		Normal	1,350	Idaho fescue	15
		Unfavorable	1,100	Spike fescue	15
				Big sagebrush	10
				Western wheatgrass	10
				Bluebunch wheatgrass	10
170*:					
Delphill	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
Blazon	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
				Fringed sagewort	5
171*:					
Delplain	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Needleandthread	10
				Black sagebrush	10
				Mutton bluegrass	10
Rock outcrop.					
172*:					
Diamondville	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Big sagebrush	10
				Bluebunch wheatgrass	10
				Green needlegrass	5
				Mutton bluegrass	5
				Douglas rabbitbrush	5
Worfman	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
				Fringed sagewort	5
173	Loamy, 10-14 Northern Plains	Favorable	1,500	Western wheatgrass	25
Docpar		Normal	1,200	Needleandthread	25
		Unfavorable	700	Blue grama	15
				Green needlegrass	15
				Big sagebrush	5
174	Sands, 10-14 Northern Plains	Favorable	1,700	Prairie sandreed	50
Draknab		Normal	1,400	Sand bluestem	25
		Unfavorable	900	Needleandthread	15
				Western wheatgrass	5
				Silver sagebrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
176*:					
Edlin	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Silver sagebrush	10
				Threadleaf sedge	10
				Bottlebrush squirreltail	5
Rock River	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	20
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Silver sagebrush	10
				Threadleaf sedge	10
				Bottlebrush squirreltail	5
Bosler	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Silver sagebrush	10
				Threadleaf sedge	10
				Bottlebrush squirreltail	5
177*:					
Edlin	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Silver sagebrush	10
				Threadleaf sedge	10
				Bottlebrush squirreltail	5
Ryan Park	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Threadleaf sedge	10
				Silver sagebrush	10
				Bottlebrush squirreltail	5
178*:					
Effington	Impervious Clay, 5-9 Wind River Basin.	Favorable	300	Birdfoot sagebrush	30
		Normal	200	Western wheatgrass	20
		Unfavorable	100	Bottlebrush squirreltail	10
				Indian ricegrass	10
				Gardner saltbush	10
				Sandberg bluegrass	5
Uffens	Impervious Clay, 5-9 Wind River Basin.	Favorable	300	Birdfoot sagebrush	30
		Normal	200	Western wheatgrass	20
		Unfavorable	100	Indian ricegrass	10
				Bottlebrush squirreltail	10
				Gardner saltbush	10
				Winterfat	5
				Bud sagebrush	5
179*:					
Enos	Sandy, 5-9 Wind River Basin	Favorable	600	Needleandthread	30
		Normal	400	Indian ricegrass	15
		Unfavorable	225	Big sagebrush	5
				Sand dropseed	5
				Thickspike wheatgrass	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
179*:					
Wallson	Sandy, 5-9 Wind River Basin	Favorable	600	Needleandthread	30
		Normal	400	Indian ricegrass	15
		Unfavorable	225	Big sagebrush	5
				Thickspike wheatgrass	5
				Sand dropseed	5
180*:					
Farlow.					
Starley	Very Shallow, 15-19 Foothills And Mountains, Southeast.	Favorable	600	Bluebunch wheatgrass	30
		Normal	500	Idaho fescue	10
		Unfavorable	300	Parry danthonia	10
				Needleandthread	10
				Antelope bitterbrush	10
				Black sagebrush	5
Rock outcrop.					
181*:					
Farlow	Shallow Loamy, 15-19 Foothills And Mountains, East.	Favorable	1,400	Columbia needlegrass	15
		Normal	1,100	Idaho fescue	15
		Unfavorable	800	Spike fescue	15
				Bluebunch wheatgrass	10
				Prairie junegrass	5
				Western wheatgrass	5
				Needleandthread	5
				Sandberg bluegrass	5
				Slender wheatgrass	5
				Phlox	5
				Lupine	5
				Big sagebrush	5
Starley	Very Shallow, 15-19 Foothills And Mountains, East.	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Columbia needlegrass	15
		Unfavorable	400	Idaho fescue	10
				Western wheatgrass	5
182*:					
Fiveoh	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
Thermopolis	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
183 Forelle	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
184*:					
Forelle	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
Diamondville	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Big sagebrush	10
				Bluebunch wheatgrass	10
				Green needlegrass	5
				Mutton bluegrass	5
				Douglas rabbitbrush	5
185*:					
Forelle	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
Lupinto	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Needleandthread	10
				Black sagebrush	10
				Mutton bluegrass	10
				Prairie junegrass	5
				Indian ricegrass	5
186*:					
Forkwood	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
Keyner	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Mutton bluegrass	5
				Green needlegrass	5
187*:					
Forkwood	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
187*:					
Ulm	Clayey, 10-14 High Plains, Southeast.	Favorable	1,300	Thickspike wheatgrass	40
		Normal	1,000	Green needlegrass	20
		Unfavorable	500	Bluebunch wheatgrass	10
				Birdfoot sagebrush	10
				Big sagebrush	5
				Mutton bluegrass	5
				Prairie junegrass	5
188*:					
Forkwood	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
Zigweid	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
189*:					
Gateridge.					
Taluce Variant	Shallow Sandy, 15-19 Northern Plains.	Favorable	1,800	Prairie sandreed	25
		Normal	1,400	Needleandthread	25
		Unfavorable	900	Bluebunch wheatgrass	10
				Western wheatgrass	10
				Silver sagebrush	5
				Idaho fescue	5
190 Griffy	Loamy, 5-9 Wind River Basin	Favorable	600	Western wheatgrass	30
		Normal	400	Big sagebrush	15
		Unfavorable	225	Needleandthread	10
				Bluebunch wheatgrass	5
				Indian ricegrass	5
				Prairie junegrass	5
				Sandberg bluegrass	5
191*:					
Griffy	Loamy, 5-9 Wind River Basin	Favorable	600	Western wheatgrass	30
		Normal	400	Big sagebrush	15
		Unfavorable	225	Needleandthread	10
				Bluebunch wheatgrass	5
				Indian ricegrass	5
				Prairie junegrass	5
				Sandberg bluegrass	5
Emblem	Shallow Loamy, 5-9 Wind River Basin.	Favorable	350	Western wheatgrass	20
		Normal	250	Bluebunch wheatgrass	15
		Unfavorable	125	Indian ricegrass	15
				Big sagebrush	10
				Needleandthread	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Compo-sition
		Kind of year	Dry weight		
			Lb/acre		Pct
193 Haverdad	Loamy, 10-14 Northern Plains	Favorable	1,500	Western wheatgrass	25
		Normal	1,200	Needleandthread	25
		Unfavorable	700	Bluebunch wheatgrass	15
				Green needlegrass	15
194*:					
Haverdad	Loamy Overflow, 10-14 High Plains, Southeast.	Favorable	2,200	Western wheatgrass	25
		Normal	1,800	Slender wheatgrass	15
		Unfavorable	1,200	Basin wildrye	10
				Canby bluegrass	10
				Silver sagebrush	10
				Mutton bluegrass	5
Clarkelen	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
				Indian ricegrass	5
195*:					
Haverdad	Saline Lowland, 10-14 High Plains, Southeast.	Favorable	2,500	Alkali sacaton	30
		Normal	1,800	Basin wildrye	20
		Unfavorable	1,200	Western wheatgrass	15
				Black greasewood	15
				Inland saltgrass	5
				Nuttall alkaligrass	5
Clarkelen	Saline Lowland, 10-14 High Plains, Southeast.	Favorable	2,500	Alkali sacaton	30
		Normal	1,800	Basin wildrye	20
		Unfavorable	1,200	Western wheatgrass	15
				Black greasewood	15
				Inland saltgrass	5
				Nuttall alkaligrass	5
196 Havermom	Saline Subirrigated, 10-14 High Plains, Southeast.	Favorable	3,400	Alkali sacaton	40
		Normal	3,000	Basin wildrye	20
		Unfavorable	2,500	Alkali bluegrass	10
				Western wheatgrass	5
				Inland saltgrass	5
				Greasewood	5
197 Hawkstone	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	25
		Unfavorable	700	Indian ricegrass	20
				Threadleaf sedge	10
				Silver sagebrush	10
198*:					
Hazton	Shallow Igneous, 15-19 Foothills And Mountains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	25
		Normal	900	Black sagebrush	15
		Unfavorable	600	Idaho fescue	10
				Sandberg bluegrass	5
				Spike fescue	5
				Thickspike wheatgrass	5
Rock outcrop.					

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
199 Hiland	Sandy, 10-14 Northern Plains	Favorable	1,600	Needleandthread	25
		Normal	1,300	Prairie sandreed	20
		Unfavorable	750	Indian ricegrass	15
				Threadleaf sedge	5
				Silver sagebrush	5
200 Hiland	Sandy, 10-14 Northern Plains	Favorable	1,600	Needleandthread	25
		Normal	1,300	Prairie sandreed	20
		Unfavorable	750	Indian ricegrass	15
				Threadleaf sedge	10
				Wheatgrass	5
				Silver sagebrush	5
201 Hiland	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Threadleaf sedge	5
				Green needlegrass	5
				Mutton bluegrass	5
202*:					
Inchau	Loamy, 15-19 Foothills And Mountains, East.	Favorable	1,600	Idaho fescue	15
		Normal	1,350	Spike fescue	15
		Unfavorable	1,100	Columbia needlegrass	15
				Big sagebrush	10
				Bluebunch wheatgrass	10
				Needleandthread	5
				Prairie junegrass	5
Clayburn	Loamy, 15-19 Foothills And Mountains, East.	Favorable	1,600	Columbia needlegrass	15
		Normal	1,350	Spike fescue	15
		Unfavorable	1,100	Idaho fescue	15
				Bluebunch wheatgrass	10
				Big sagebrush	10
Chittum	Shallow Loamy, 15-19 Foothills And Mountains, East.	Favorable	1,000	Columbia needlegrass	15
		Normal	850	Idaho fescue	15
		Unfavorable	500	Spike fescue	15
				Bluebunch wheatgrass	10
				Big sagebrush	5
				Black sagebrush	5
				Mountain brome	5
				Prairie junegrass	5
				Sandberg bluegrass	5
				Slender wheatgrass	5
				Western wheatgrass	5
203*:					
Inchau	Loamy, 15-19 Foothills And Mountains, Southeast.	Favorable	2,000	Bluebunch wheatgrass	20
		Normal	1,500	Idaho fescue	20
		Unfavorable	800	Griffith wheatgrass	10
				Prairie junegrass	10
				Big sagebrush	5
				Needleandthread	5
				Parry danthonia	5
				Spike fescue	5
				Threetip sagebrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
203*:					
Farlow	Shallow Loamy, 15-19 Foothills And Mountains, Southeast.	Favorable	1,400	Columbia needlegrass	15
		Normal	1,100	Idaho fescue	15
		Unfavorable	800	Spike fescue	15
				Bluebunch wheatgrass	10
				Big sagebrush	5
204 Irson	Shallow Igneous, 15-19 Foothills And Mountains, East.	Favorable	950	Idaho fescue	20
		Normal	800	Columbia needlegrass	20
		Unfavorable	450	Bluebunch wheatgrass	10
				Black sagebrush	10
				Western wheatgrass	5
205*:					
Irson	Shallow Igneous, 15-19 Foothills And Mountains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	25
		Normal	900	Slimstem muhly	15
		Unfavorable	600	Threetip sagebrush	15
				Idaho fescue	5
				Western wheatgrass	5
Kezar	Loamy, 15-19 Foothills And Mountains, Southeast.	Favorable	2,000	Bluebunch wheatgrass	20
		Normal	1,500	Idaho fescue	20
		Unfavorable	800	Prairie junegrass	10
				Griffith wheatgrass	10
				Big sagebrush	5
Rock outcrop.					
206*:					
Irson	Shallow Igneous, 20+ Mountains	Favorable	1,800	Bluebunch wheatgrass	35
		Normal	1,500	Spike fescue	15
		Unfavorable	1,200	Thickspike wheatgrass	10
				Antelope bitterbrush	10
				Idaho fescue	5
				Black sagebrush	5
Sebud.					
207*:					
Keeline	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	25
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	10
				Threadleaf sedge	10
				Silver sagebrush	10
				Blue grama	5
Taluce	Shallow Sandy, 10-14 High Plains, Southeast.	Favorable	1,200	Needleandthread	25
		Normal	900	Bluebunch wheatgrass	20
		Unfavorable	700	Indian ricegrass	10
				Mutton bluegrass	10
				Threadleaf sedge	10
				Black sagebrush	5
Rock outcrop.					

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
208 Keyner	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Mutton bluegrass	5
				Green needlegrass	5
209*:					
Keyner	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Mutton bluegrass	5
				Green needlegrass	5
Absted	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	35
		Normal	1,100	Big sagebrush	10
		Unfavorable	600	Needleandthread	15
				Green needlegrass	10
				Blue grama	5
				Mutton bluegrass	5
Slickspots.					
210*:					
Keyner	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Mutton bluegrass	5
				Green needlegrass	5
Hiland	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Threadleaf sedge	5
				Green needlegrass	5
				Mutton bluegrass	5
211*:					
Kezar	Loamy, 15-19 Foothills And Mountains, East.	Favorable	1,600	Idaho fescue	15
		Normal	1,350	Columbia needlegrass	15
		Unfavorable	1,100	Spike fescue	15
				Bluebunch wheatgrass	10
				Big sagebrush	10
Irson	Shallow Igneous, 15-19 Foothills And Mountains, East.	Favorable	950	Idaho fescue	20
		Normal	800	Columbia needlegrass	20
		Unfavorable	450	Bluebunch wheatgrass	10
				Black sagebrush	10
				Western wheatgrass	5
Clayburn	Loamy, 15-19 Foothills And Mountains, East.	Favorable	1,600	Columbia needlegrass	15
		Normal	1,350	Spike fescue	15
		Unfavorable	1,100	Idaho fescue	15
				Bluebunch wheatgrass	10
				Big sagebrush	10

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
212 Lander	Subirrigated, 10-14 High Plains, Southeast.	Favorable	4,300	Basin wildrye	40
		Normal	3,700	Tufted hairgrass	20
		Unfavorable	3,000	Western wheatgrass	10
				Bluejoint reedgrass	5
				Canby bluegrass	5
				Slender wheatgrass	5
				Willow	5
213*: Leavitt	Loamy, 15-19 Foothills And Mountains, Southeast.	Favorable	2,000	Bluebunch wheatgrass	20
		Normal	1,500	Idaho fescue	20
		Unfavorable	800	Prairie junegrass	10
				Griffith wheatgrass	10
				Spike fescue	5
				Big sagebrush	5
Coutis	Loamy, 15-19 Foothills And Mountains, Southeast.	Favorable	2,000	Bluebunch wheatgrass	20
		Normal	1,500	Idaho fescue	20
		Unfavorable	800	Prairie junegrass	10
				Griffith wheatgrass	10
				Spike fescue	5
				Big sagebrush	5
214*: Lolite	Shale, 10-14 High Plains, Southeast.	Favorable	400	Western wheatgrass	30
		Normal	300	Gardner saltbush	15
		Unfavorable	200	Indian ricegrass	10
				Bottlebrush squirreltail	10
				Inland saltgrass	10
				Bluebunch wheatgrass	5
				Sandberg bluegrass	5
				Birdfoot sagebrush	5
Rock outcrop.					
215*: Lolite	Shale, 5-9 Wind River Basin	Favorable	200	Bluebunch wheatgrass	20
		Normal	100	Bottlebrush squirreltail	15
		Unfavorable	50	Western wheatgrass	10
				Indian ricegrass	10
				Gardner saltbush	10
				Sandberg bluegrass	5
				Birdfoot sagebrush	5
Rock outcrop.					
216 Lonebear	Clayey, 10-14 Northern Plains	Favorable	1,800	Green needlegrass	35
		Normal	1,300	Western wheatgrass	30
		Unfavorable	750	Blue grama	5
				Cusick bluegrass	5
				Prairie junegrass	5
				Big sagebrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
217*:					
Lupinto	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Needleandthread	10
				Black sagebrush	10
				Mutton bluegrass	10
				Prairie junegrass	5
				Indian ricegrass	5
Alcova	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Big sagebrush	10
				Bluebunch wheatgrass	10
				Green needlegrass	5
				Mutton bluegrass	5
218 Lupinto Family	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	25
		Normal	900	Western wheatgrass	15
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
219*:					
McFadden	Shallow Sandy, 10-14 High Plains, Southeast.	Favorable	1,200	Needleandthread	25
		Normal	900	Bluebunch wheatgrass	20
		Unfavorable	700	Threadleaf sedge	15
				Indian ricegrass	10
				Mutton bluegrass	10
				Black sagebrush	5
Edlin	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Silver sagebrush	10
				Threadleaf sedge	10
				Bottlebrush squirreltail	5
Blackhall	Shallow Sandy, 10-14 High Plains, Southeast.	Favorable	1,200	Needleandthread	25
		Normal	900	Bluebunch wheatgrass	20
		Unfavorable	700	Threadleaf sedge	15
				Indian ricegrass	10
				Black sagebrush	5
				Mutton bluegrass	10
220*:					
Middlewood	Shallow Clayey, 10-14 High Plains, Southeast.	Favorable	1,000	Western wheatgrass	35
		Normal	800	Bluebunch wheatgrass	10
		Unfavorable	500	Bottlebrush squirreltail	10
				Mutton bluegrass	10
				Winterfat	10
				Big sagebrush	5
				Prairie junegrass	5
Kather	Clayey, 10-14 High Plains, Southeast.	Favorable	1,300	Thickspike wheatgrass	40
		Normal	1,000	Green needlegrass	20
		Unfavorable	500	Birdfoot sagebrush	10
				Bluebunch wheatgrass	5
				Bottlebrush squirreltail	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
221*:					
Milren	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	35
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Big sagebrush	10
				Bluebunch wheatgrass	10
				Green needlegrass	10
				Mutton bluegrass	5
Bosler	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Silver sagebrush	10
				Threadleaf sedge	10
				Bottlebrush squirreltail	5
Rock River	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Silver sagebrush	10
				Threadleaf sedge	10
				Bottlebrush squirreltail	5
222*:					
Mudray	Saline Upland, 5-9 Wind River Basin.	Favorable	400	Gardner saltbush	30
		Normal	300	Indian ricegrass	15
		Unfavorable	200	Bottlebrush squirreltail	15
				Western wheatgrass	10
Bributte	Saline Upland, 5-9 Wind River Basin.	Favorable	400	Gardner saltbush	30
		Normal	300	Bottlebrush squirreltail	15
		Unfavorable	200	Indian ricegrass	15
				Western wheatgrass	10
Birdsley	Saline Upland, 5-9 Wind River Basin.	Favorable	400	Gardner saltbush	30
		Normal	300	Bottlebrush squirreltail	15
		Unfavorable	200	Indian ricegrass	15
				Western wheatgrass	10
223*:					
Nathrop	Shallow Loamy, 15-19 Foothills And Mountains, East.	Favorable	1,000	Columbia needlegrass	15
		Normal	850	Idaho fescue	15
		Unfavorable	500	Spike fescue	15
				Bluebunch wheatgrass	10
				Big sagebrush	10
				Prairie junegrass	5
				Western wheatgrass	5
Starley	Very Shallow, 15-19 Foothills And Mountains, East.	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Columbia needlegrass	15
		Unfavorable	400	Idaho fescue	10
				Western wheatgrass	5
224*:					
Neldore	Shallow Clayey, 10-14 High Plains, Southeast.	Favorable	1,000	Western wheatgrass	40
		Normal	800	Bluebunch wheatgrass	10
		Unfavorable	500	Mutton bluegrass	10
				Bottlebrush squirreltail	10
				Big sagebrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
224*:					
Moyerson	Shallow Clayey, 10-14 High Plains, Southeast.	Favorable	1,000	Western wheatgrass	40
		Normal	800	Bluebunch wheatgrass	10
		Unfavorable	500	Mutton bluegrass	10
				Bottlebrush squirreltail	10
				Winterfat	5
				Big sagebrush	5
Rock outcrop.					
225 Nunnston	Loamy, 15-19 Foothills And Mountains, Southeast.	Favorable	2,000	Bluebunch wheatgrass	20
		Normal	1,500	Idaho fescue	20
		Unfavorable	800	Griffith wheatgrass	10
				Prairie junegrass	10
				Columbia needlegrass	5
				Threetip sagebrush	5
				Big sagebrush	5
226*:					
Oceanet	Shallow Sandy, 5-9 Wind River Basin.	Favorable	350	Needleandthread	20
		Normal	250	Western wheatgrass	15
		Unfavorable	125	Thickspike wheatgrass	15
				Bluebunch wheatgrass	10
				Indian ricegrass	10
				Threadleaf sedge	10
				Blue grama	5
				Bottlebrush squirreltail	5
				Prairie junegrass	5
				Sandberg bluegrass	5
Persayo	Shallow Loamy, 5-9 Wind River Basin.	Favorable	350	Western wheatgrass	20
		Normal	250	Bluebunch wheatgrass	15
		Unfavorable	125	Indian ricegrass	15
				Big sagebrush	10
				Needleandthread	5
227*:					
Orella	Impervious Clay, 10-14 High Plains, Southeast.	Favorable	700	Western wheatgrass	25
		Normal	500	Birdfoot sagebrush	25
		Unfavorable	350	Bottlebrush squirreltail	10
				Indian ricegrass	10
				Gardner saltbush	10
Cadoma	Impervious Clay, 10-14 High Plains, Southeast.	Favorable	700	Birdfoot sagebrush	30
		Normal	500	Western wheatgrass	25
		Unfavorable	350	Gardner saltbush	10
				Indian ricegrass	10
				Bottlebrush squirreltail	10
Petrie	Impervious Clay, 10-14 High Plains, Southeast.	Favorable	700	Birdfoot sagebrush	25
		Normal	500	Western wheatgrass	20
		Unfavorable	350	Gardner saltbush	10
				Indian ricegrass	10
				Bottlebrush squirreltail	5
				Winterfat	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
228*:					
Orella	Impervious Clay, 10-14 High Plains, Southeast.	Favorable	700	Western wheatgrass	25
		Normal	500	Birdfoot sagebrush	25
		Unfavorable	350	Bottlebrush squirreltail	10
				Indian ricegrass	10
				Gardner saltbush	10
Rock outcrop.					
229 Orpha	Sands, 10-14 Northern Plains	Favorable	1,700	Prairie sandreed	50
		Normal	1,400	Sand bluestem	25
		Unfavorable	900	Needleandthread	15
				Indian ricegrass	10
				Yucca	5
230*:					
Orpha	Sands, 10-14 Northern Plains	Favorable	1,700	Prairie sandreed	50
		Normal	1,400	Sand bluestem	25
		Unfavorable	900	Needleandthread	15
				Indian ricegrass	5
Tullock	Sands, 10-14 Northern Plains	Favorable	1,700	Prairie sandweed	50
		Normal	1,400	Sand bluestem	25
		Unfavorable	900	Needleandthread	15
				Indian ricegrass	5
Rock outcrop.					
231*:					
Orpha	Sands, 10-14 Northern Plains	Favorable	1,700	Prairie sandreed	50
		Normal	1,400	Sand bluestem	25
		Unfavorable	900	Needleandthread	15
				Indian ricegrass	5
Vonalee	Sandy, 10-14 Northern Plains	Favorable	1,600	Needleandthread	25
		Normal	1,300	Prairie sandreed	20
		Unfavorable	750	Indian ricegrass	15
Roughlock	Loamy, 10-14 Northern Plains	Favorable	1,500	Western wheatgrass	25
		Normal	1,200	Needleandthread	25
		Unfavorable	700	Blue grama	15
				Green needlegrass	15
				Prairie junegrass	5
				Big sagebrush	5
232*:					
Persayo	Shallow Loamy, 5-9 Wind River Basin.	Favorable	350	Western wheatgrass	20
		Normal	250	Bluebunch wheatgrass	15
		Unfavorable	125	Indian ricegrass	15
				Big sagebrush	10
				Needleandthread	5
Greybull	Loamy, 5-9 Wind River Basin	Favorable	600	Western wheatgrass	30
		Normal	400	Big sagebrush	15
		Unfavorable	225	Needleandthread	10
				Indian ricegrass	5
				Sandberg bluegrass	5
				Bluebunch wheatgrass	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production Kind of year	 Dry weight	Characteristic vegetation	Composition
			Lb/acre		Pct
233*:					
Pesmore	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	25
		Normal	900	Western wheatgrass	25
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
Asholler	Very Shallow, 10-14 High Plains, Southeast.	Favorable	600	Bluebunch wheatgrass	40
		Normal	450	Western wheatgrass	10
		Unfavorable	250	Bottlebrush squirreltail	10
				Black sagebrush	5
				Antelope bitterbrush	5
Rock outcrop.					
234 Petrie	Saline Upland, 10-14 High Plains, Southeast.	Favorable	650	Gardner saltbush	40
		Normal	500	Bottlebrush squirreltail	10
		Unfavorable	300	Western wheatgrass	10
				Indian ricegrass	10
				Alkali sacaton	5
				Greasewood	5
				Winterfat	5
				Birdfoot sagebrush	5
235*:					
Petrie, wet	Saline Subirrigated, 10-14 High Plains, Southeast.	Favorable	3,400	Alkali sacaton	50
		Normal	3,000	Basin wildrye	15
		Unfavorable	2,500	Alkali bluegrass	10
				Western wheatgrass	5
				Inland saltgrass	5
				Greasewood	5
Zigweid, wet	Saline Subirrigated, 10-14 High Plains, Southeast.	Favorable	3,400	Alkali sacaton	40
		Normal	3,000	Basin wildrye	20
		Unfavorable	2,500	Alkali bluegrass	10
				Inland saltgrass	5
				Greasewood	5
				Western wheatgrass	5
236*:					
Petrie	Impervious Clay, 10-14 High Plains, Southeast.	Favorable	700	Birdfoot sagebrush	25
		Normal	500	Western wheatgrass	20
		Unfavorable	350	Gardner saltbush	10
				Indian ricegrass	10
				Bottlebrush squirreltail	5
				Winterfat	5
Arvada	Impervious Clay, 10-14 High Plains, Southeast.	Favorable	700	Western wheatgrass	25
		Normal	500	Birdfoot sagebrush	25
		Unfavorable	350	Bottlebrush squirreltail	10
				Gardner saltbush	10
				Indian ricegrass	10

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
237*:					
Peyton	Loamy, 15-19 Foothills And Mountains, Southeast.	Favorable	2,000	Bluebunch wheatgrass	20
		Normal	1,500	Idaho fescue	20
		Unfavorable	800	Prairie junegrass	10
				Griffith wheatgrass	10
				Big sagebrush	5
				Columbia needlegrass	5
				Threetip sagebrush	5
Holderness	Loamy, 15-19 Foothills And Mountains, Southeast.	Favorable	2,000	Bluebunch wheatgrass	20
		Normal	1,500	Idaho fescue	20
		Unfavorable	800	Prairie junegrass	10
				Griffith wheatgrass	10
				Columbia needlegrass	10
				Big sagebrush	5
				Threetip sagebrush	5
239*:					
Pokeman	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Western wheatgrass	20
		Normal	900	Bluebunch wheatgrass	20
		Unfavorable	700	Needleandthread	10
				Mutton bluegrass	10
				Black sagebrush	10
Threetop	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	20
		Unfavorable	600	Big sagebrush	10
				Bluebunch wheatgrass	10
				Indian ricegrass	5
				Mutton bluegrass	5
240*:					
Poposhia	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
Blazon	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
				Fringed sagewort	5
241*:					
Rawlins	Shallow Sandy, 10-14 High Plains, Southeast.	Favorable	1,200	Needleandthread	25
		Normal	900	Bluebunch wheatgrass	20
		Unfavorable	700	Threadleaf sedge	15
				Indian ricegrass	10
				Mutton bluegrass	10
				Black sagebrush	5
McFadden	Shallow Sandy, 10-14 High Plains, Southeast.	Favorable	1,200	Needleandthread	25
		Normal	900	Bluebunch wheatgrass	20
		Unfavorable	700	Threadleaf sedge	15
				Indian ricegrass	10
				Mutton bluegrass	10
				Black sagebrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
241*:					
Blackhall	Shallow Sandy, 10-14 High Plains, Southeast.	Favorable	1,200	Needleandthread	25
		Normal	900	Bluebunch wheatgrass	20
		Unfavorable	700	Threadleaf sedge	15
				Indian ricegrass	10
				Black sagebrush	5
				Mutton bluegrass	10
242*:					
Rawlins	Shallow Sandy, 10-14 High Plains, Southeast.	Favorable	1,200	Needleandthread	25
		Normal	900	Bluebunch wheatgrass	20
		Unfavorable	700	Threadleaf sedge	15
				Indian ricegrass	10
				Mutton bluegrass	10
				Black sagebrush	5
Rock River	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Silver sagebrush	10
				Threadleaf sedge	10
				Bottlebrush squirreltail	5
243*:					
Redsun	Shallow Breaks, 10-14 High Plains, Southeast.	Favorable	1,300	Juniper	40
		Normal	1,000	Bluebunch wheatgrass	15
		Unfavorable	800	Needleandthread	10
				Western wheatgrass	5
				Prairie junegrass	5
				Black sagebrush	5
				Big sagebrush	5
				Mountainmahogany	5
Rock outcrop.					
244*:					
Redsun	Very Shallow, 10-14 High Plains, Southeast.	Favorable	600	Bluebunch wheatgrass	45
		Normal	450	Western wheatgrass	10
		Unfavorable	250	Needleandthread	5
				Threadleaf sedge	5
				Prairie junegrass	5
				Black sagebrush	5
				Big sagebrush	5
Rock outcrop.					
Redbow	Loamy, 10-14 Northern Plains	Favorable	1,500	Western wheatgrass	25
		Normal	1,200	Needleandthread	25
		Unfavorable	700	Blue grama	15
				Green needlegrass	15
				Cusick bluegrass	5
				Indian ricegrass	5
				Prairie junegrass	5
				Big sagebrush	5
				Threadleaf sedge	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
245*:					
Rekop	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
Rock outcrop.					
246*:					
Relsob	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
Peyton	Loamy, 15-19 Foothills And Mountains, Southeast.	Favorable	2,000	Bluebunch wheatgrass	20
		Normal	1,500	Idaho fescue	15
		Unfavorable	800	Prairie junegrass	10
				Griffith wheatgrass	10
				Big sagebrush	5
247*:					
Rencot	Very Shallow, 10-14 High Plains, Southeast.	Favorable	600	Bluebunch wheatgrass	40
		Normal	450	Bottlebrush squirreltail	10
		Unfavorable	250	Western wheatgrass	10
				Black sagebrush	5
Blazon	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
				Fringed sagewort	5
248*:					
Rencot	Very Shallow, 10-14 High Plains, Southeast.	Favorable	600	Bluebunch wheatgrass	40
		Normal	450	Bottlebrush squirreltail	10
		Unfavorable	250	Western wheatgrass	10
				Black sagebrush	5
Rock outcrop.					
249*:					
Rencot	Very Shallow, 10-14 High Plains, Southeast.	Favorable	600	Bluebunch wheatgrass	40
		Normal	450	Bottlebrush squirreltail	10
		Unfavorable	250	Western wheatgrass	10
				Black sagebrush	5
Duffson	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Compo-sition
		Kind of year	Dry weight		
			Lb/acre		Pct
250*:					
Rencot	Very Shallow, 10-14 High Plains, Southeast.	Favorable	600	Bluebunch wheatgrass	40
		Normal	450	Bottlebrush squirreltail	10
		Unfavorable	250	Western wheatgrass	10
				Black sagebrush	5
Thermopolis	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
Rock outcrop.					
251 Rivra	Lowland, 10-14 Northern Plains	Favorable	3,000	Green needlegrass	25
		Normal	2,300	Western wheatgrass	10
		Unfavorable	1,600	Slender wheatgrass	10
				Silver sagebrush	5
254*:					
Rock outcrop.					
Birdsley	Saline Upland, 5-9 Wind River Basin.	Favorable	400	Gardner saltbush	30
		Normal	300	Bottlebrush squirreltail	15
		Unfavorable	200	Indian ricegrass	15
				Western wheatgrass	10
255*:					
Rock outcrop.					
Cathedral	Very Shallow, 10-14 High Plains, Southeast.	Favorable	600	Bluebunch wheatgrass	40
		Normal	450	Black sagebrush	10
		Unfavorable	250	Western wheatgrass	10
				Bottlebrush squirreltail	10
				Antelope bitterbrush	5
				Mountainmahogany	5
				Needleandthread	5
257 Rock River	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Silver sagebrush	10
				Threadleaf sedge	10
				Bluebunch wheatgrass	5
				Bottlebrush squirreltail	5
258*:					
Rock River	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Silver sagebrush	10
				Threadleaf sedge	10
				Bluebunch wheatgrass	5
				Bottlebrush squirreltail	5
Hawkstone	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	25
		Unfavorable	700	Indian ricegrass	20
				Threadleaf sedge	10
				Silver sagebrush	10

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
259*:					
Rock River	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Needleandthread	15
		Normal	1,100	Western wheatgrass	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
Pinelli	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
Blazon	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
				Fringed sagewort	5
260*:					
Rock River	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Silver sagebrush	10
				Threadleaf sedge	10
				Bottlebrush squirreltail	5
Rawlins	Shallow Sandy, 10-14 High Plains, Southeast.	Favorable	1,200	Needleandthread	25
		Normal	900	Bluebunch wheatgrass	20
		Unfavorable	700	Threadleaf sedge	15
				Indian ricegrass	10
				Mutton bluegrass	10
				Black sagebrush	5
Brownsto	Shallow Sandy, 10-14 High Plains, Southeast.	Favorable	1,200	Needleandthread	25
		Normal	900	Bluebunch wheatgrass	20
		Unfavorable	700	Threadleaf sedge	15
				Indian ricegrass	10
				Mutton bluegrass	10
				Black sagebrush	5
261*:					
Rock River	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Silver sagebrush	10
				Threadleaf sedge	10
				Bluebunch wheatgrass	5
				Bottlebrush squirreltail	5
Ryan Park	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Threadleaf sedge	10
				Silver sagebrush	10
				Bottlebrush squirreltail	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
261*:					
McFadden	Shallow Sandy, 10-14 High Plains, Southeast.	Favorable	1,200	Needleandthread	25
		Normal	900	Bluebunch wheatgrass	20
		Unfavorable	700	Threadleaf sedge	15
				Indian ricegrass	10
				Mutton bluegrass	10
				Black sagebrush	5
262*:					
Rock River	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Silver sagebrush	10
				Threadleaf sedge	10
				Bluebunch wheatgrass	5
				Bottlebrush squirreltail	5
Worfman	Shallow Sandy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Needleandthread	20
		Unfavorable	700	Western wheatgrass	10
				Mutton bluegrass	10
				Indian ricegrass	10
				Threadleaf sedge	10
				Black sagebrush	5
263*:					
Rock River	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Silver sagebrush	10
				Threadleaf sedge	10
				Bluebunch wheatgrass	5
				Bottlebrush squirreltail	5
Ryan Park	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Threadleaf sedge	10
				Silver sagebrush	10
				Bottlebrush squirreltail	5
Hawkstone	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	25
		Unfavorable	700	Indian ricegrass	20
				Threadleaf sedge	10
				Silver sagebrush	10
264 Roughlock	Loamy, 10-14 Northern Plains	Favorable	1,500	Western wheatgrass	25
		Normal	1,200	Needleandthread	25
		Unfavorable	700	Blue grama	15
				Green needlegrass	15
				Prairie junegrass	5
				Big sagebrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
265*:					
Roughlock	Loamy, 10-14 Northern Plains	Favorable	1,500	Western wheatgrass	25
		Normal	1,200	Needleandthread	25
		Unfavorable	700	Blue grama	15
				Green needlegrass	15
				Indian ricegrass	5
				Big sagebrush	5
Redbow	Loamy, 10-14 Northern Plains	Favorable	1,500	Western wheatgrass	25
		Normal	1,200	Needleandthread	25
		Unfavorable	700	Blue grama	15
				Green needlegrass	15
				Cusick bluegrass	5
				Indian ricegrass	5
				Prairie junegrass	5
				Big sagebrush	5
				Threadleaf sedge	5
Redspear	Shallow Loamy, 10-14 Northern Plains.	Favorable	1,200	Bluebunch wheatgrass	35
		Normal	900	Western wheatgrass	15
		Unfavorable	450	Needleandthread	10
				Threadleaf sedge	10
				Blue grama	5
				Prairie junegrass	5
				Phlox	5
				Big sagebrush	5
				Black sagebrush	5
266*:					
Roughlock	Loamy, 10-14 Northern Plains	Favorable	1,500	Western wheatgrass	25
		Normal	1,200	Needleandthread	25
		Unfavorable	700	Blue grama	15
				Green needlegrass	15
				Prairie junegrass	5
				Big sagebrush	5
Buffcreek	Shallow Loamy, 10-14 Northern Plains.	Favorable	1,200	Bluebunch wheatgrass	35
		Normal	900	Western wheatgrass	15
		Unfavorable	450	Needleandthread	10
				Threadleaf sedge	10
				Sandberg bluegrass	5
				Indian ricegrass	5
				Prairie junegrass	5
				Big sagebrush	5
				Black sagebrush	5
267*:					
Rubble land.					
Ustic Torriorthents	Shallow Breaks, 10-14 High Plains, Southeast.	Favorable	1,300	Juniper	40
		Normal	1,000	Bluebunch wheatgrass	20
		Unfavorable	800	Needleandthread	10
				Thickspike wheatgrass	10
				Bottlebrush squirreltail	10

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
268 Ryan Park	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Threadleaf sedge	10
				Silver sagebrush	10
				Bottlebrush squirreltail	5
269*:					
Ryan Park	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Threadleaf sedge	10
				Silver sagebrush	10
				Bottlebrush squirreltail	5
Elk Mountain	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Prairie junegrass	5
				Threadleaf sedge	10
				Silver sagebrush	10
270*:					
Saddle	Loamy, 5-9 Wind River Basin	Favorable	600	Western wheatgrass	30
		Normal	400	Big sagebrush	15
		Unfavorable	225	Needleandthread	10
				Indian ricegrass	5
				Bluebunch wheatgrass	5
Griffy	Loamy, 5-9 Wind River Basin	Favorable	600	Western wheatgrass	30
		Normal	400	Big sagebrush	15
		Unfavorable	225	Needleandthread	10
				Bluebunch wheatgrass	5
				Indian ricegrass	5
				Prairie junegrass	5
				Sandberg bluegrass	5
272 Samday	Shallow Clayey, 10-14 Northern Plains.	Favorable	1,000	Western wheatgrass	40
		Normal	750	Green needlegrass	40
		Unfavorable	450	Bluebunch wheatgrass	15
273*:					
Savageton	Clayey, 10-14 Northern Plains	Favorable	1,400	Thickspike wheatgrass	40
		Normal	1,000	Green needlegrass	40
		Unfavorable	600	Blue grama	10
Samday	Shallow Clayey, 10-14 Northern Plains.	Favorable	1,000	Western wheatgrass	40
		Normal	750	Green needlegrass	40
		Unfavorable	450	Bluebunch wheatgrass	15
274*:					
Shingle	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	5
				Indian ricegrass	5
				Big sagebrush	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
274*:					
Samday------------	Shale, 10-14 High Plains, Southeast.	Favorable	400	Western wheatgrass------------	40
		Normal	300	Gardner saltbush--------------	15
		Unfavorable	200	Indian ricegrass--------------	10
				Bottlebrush squirreltail------	10
				Inland saltgrass--------------	10
				Birdfoot sagebrush------------	5
275*:					
Shingle-----------	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass----------	20
		Normal	900	Western wheatgrass------------	20
		Unfavorable	700	Mutton bluegrass--------------	10
				Needleandthread---------------	10
				Black sagebrush---------------	5
				Indian ricegrass--------------	5
				Big sagebrush-----------------	5
Taluce------------	Shallow Sandy, 10-14 High Plains, Southeast.	Favorable	1,200	Needleandthread---------------	25
		Normal	900	Bluebunch wheatgrass----------	20
		Unfavorable	700	Indian ricegrass--------------	10
				Mutton bluegrass--------------	10
				Threadleaf sedge--------------	10
				Black sagebrush---------------	5
Rock outcrop.					
276*:					
Shingle-----------	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass----------	20
		Normal	900	Western wheatgrass------------	20
		Unfavorable	700	Mutton bluegrass--------------	10
				Needleandthread---------------	10
				Black sagebrush---------------	5
				Indian ricegrass--------------	5
				Big sagebrush-----------------	5
Theedle-----------	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass------------	30
		Normal	1,100	Needleandthread---------------	15
		Unfavorable	600	Bluebunch wheatgrass----------	10
				Big sagebrush-----------------	10
				Green needlegrass-------------	5
				Mutton bluegrass--------------	5
277---------------- Silhouette	Clayey, 10-14 Northern Plains	Favorable	1,400	Green needlegrass-------------	40
		Normal	1,000	Western wheatgrass------------	40
		Unfavorable	600	Blue grama--------------------	10
278*:					
Silhouette--------	Clayey, 10-14 High Plains, Southeast.	Favorable	1,300	Thickspike wheatgrass---------	40
		Normal	1,000	Green needlegrass-------------	20
		Unfavorable	500	Birdfoot sagebrush------------	10
				Mutton bluegrass--------------	10
				Bluebunch wheatgrass----------	5
				Bottlebrush squirreltail------	5
Petrie------------	Impervious Clay, 10-14 High Plains, Southeast.	Favorable	700	Birdfoot sagebrush------------	25
		Normal	500	Western wheatgrass------------	20
		Unfavorable	350	Gardner saltbush--------------	10
				Indian ricegrass--------------	10
				Bottlebrush squirreltail------	5
				Winterfat---------------------	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
279*:					
Starley	Very Shallow, 15-19 Foothills And Mountains, East.	Favorable	800	Bluebunch wheatgrass	15
		Normal	600	Columbia needlegrass	15
		Unfavorable	400	Idaho fescue	10
				Western wheatgrass	5
Rock outcrop.					
280*:					
Stunner	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
Pinelli	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
281*:					
Sunup	Very Shallow, 10-14 High Plains, Southeast.	Favorable	600	Bluebunch wheatgrass	45
		Normal	450	Western wheatgrass	10
		Unfavorable	250	Bottlebrush squirreltail	10
				Indian ricegrass	5
				Needleandthread	5
				Threadleaf sedge	5
				Black sagebrush	5
Kishona	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
				Indian ricegrass	5
Rock outcrop.					
282*:					
Terro	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Threadleaf sedge	10
				Silver sagebrush	10
				Bottlebrush squirreltail	5
Vonalee	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Threadleaf sedge	10
				Silver sagebrush	10
				Bottlebrush squirreltail	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
283*:					
Theedle	Steep Loamy, 10-14 High Plains, Southeast.	Favorable	1,100	Western wheatgrass	30
		Normal	900	Needleandthread	15
		Unfavorable	400	Bluebunch wheatgrass	15
				Mutton bluegrass	15
				Big sagebrush	10
				Green needlegrass	5
Shingle	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	20
		Normal	900	Western wheatgrass	20
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	5
				Indian ricegrass	5
				Big sagebrush	5
Kishona	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
				Indian ricegrass	5
284*:					
Threetop	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	20
		Unfavorable	600	Big sagebrush	10
				Bluebunch wheatgrass	10
				Indian ricegrass	5
				Prairie junegrass	5
Sunup	Very Shallow, 10-14 High Plains, Southeast.	Favorable	600	Bluebunch wheatgrass	45
		Normal	450	Western wheatgrass	10
		Unfavorable	250	Bottlebrush squirreltail	10
				Indian ricegrass	5
				Needleandthread	5
				Threadleaf sedge	5
				Black sagebrush	5
Frontier	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	25
		Normal	900	Western wheatgrass	25
		Unfavorable	700	Mutton bluegrass	10
				Needleandthread	10
				Black sagebrush	10
285 Tisworth	Saline Lowland, 10-14 High Plains, Southeast.	Favorable	2,500	Alkali sacaton	30
		Normal	1,800	Basin wildrye	20
		Unfavorable	1,200	Western wheatgrass	15
				Black greasewood	15
				Inland saltgrass	5
				Nuttall alkaligrass	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
286*:					
Travson	Shallow Sandy, 10-14 High Plains, Southeast.	Favorable	1,200	Needleandthread	25
		Normal	900	Bluebunch wheatgrass	20
		Unfavorable	700	Indian ricegrass	10
				Mutton bluegrass	10
				Western wheatgrass	5
				Prairie junegrass	5
				Sandberg bluegrass	5
				Mountainmahogany	5
				Black sagebrush	5
Rock outcrop.					
287*:					
Typic Fluvaquents	Subirrigated, 10-14 High Plains, Southeast.	Favorable	4,300	Basin wildrye	40
		Normal	3,700	Tufted hairgrass	20
		Unfavorable	3,000	Western wheatgrass	10
Aquic Ustifluvents	Saline Subirrigated, 10-14 High Plains, Southeast.	Favorable	3,400	Alkali sacaton	40
		Normal	3,000	Basin wildrye	20
		Unfavorable	2,500	Alkali bluegrass	10
				Greasewood	5
288 Typic Haplaquolls	Subirrigated, 15-19 Foothills And Mountains, Southeast.	Favorable	4,500	Basin wildrye	40
		Normal	4,000	Tufted hairgrass	15
		Unfavorable	3,300	Western wheatgrass	10
				Slender wheatgrass	10
289 Typic Torrifluvents	Saline Lowland, 5-9 Wind River Basin.	Favorable	1,600	Alkali sacaton	20
		Normal	1,200	Basin wildrye	15
		Unfavorable	700	Greasewood	15
				Western wheatgrass	10
290*:					
Uffens, thick surface	Loamy, 5-9 Wind River Basin	Favorable	600	Needleandthread	25
		Normal	400	Western wheatgrass	20
		Unfavorable	225	Big sagebrush	10
				Blue grama	5
				Indian ricegrass	5
				Bottlebrush squirreltail	5
				Winterfat	5
Uffens	Impervious Clay, 5-9 Wind River Basin.	Favorable	300	Birdfoot sagebrush	30
		Normal	200	Western wheatgrass	20
		Unfavorable	100	Indian ricegrass	10
				Bottlebrush squirreltail	10
				Gardner saltbush	10
				Winterfat	5
				Bud sagebrush	5
291*:					
Uffens	Saline Lowland, 5-9 Wind River Basin.	Favorable	1,600	Alkali sacaton	25
		Normal	1,200	Western wheatgrass	20
		Unfavorable	700	Basin wildrye	15
				Greasewood	15
				Indian ricegrass	5
				Shadscale	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
291*:					
Typic Torrifluvents	Saline Lowland, 5-9 Wind River Basin.	Favorable	1,600	Alkali sacaton	20
		Normal	1,200	Basin wildrye	15
		Unfavorable	700	Greasewood	15
				Western wheatgrass	10
292 Ulm	Clayey, 10-14 High Plains, Southeast.	Favorable	1,300	Thickspike wheatgrass	40
		Normal	1,000	Green needlegrass	20
		Unfavorable	500	Bluebunch wheatgrass	10
				Birdfoot sagebrush	10
				Big sagebrush	5
				Mutton bluegrass	5
				Prairie junegrass	5
293*:					
Ulm	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	35
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
Absted	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	35
		Normal	1,100	Big sagebrush	15
		Unfavorable	600	Needleandthread	15
				Green needlegrass	10
				Blue grama	5
294 Ulrant	Loamy, 15-19 Foothills And Mountains, Southeast.	Favorable	2,000	Idaho fescue	20
		Normal	1,500	Bluebunch wheatgrass	20
		Unfavorable	800	Prairie junegrass	10
				Griffith wheatgrass	10
				Threetip sagebrush	5
				Big sagebrush	5
300 Vonalee	Sandy, 10-14 Northern Plains	Favorable	1,600	Needleandthread	25
		Normal	1,300	Prairie sandreed	20
		Unfavorable	750	Indian ricegrass	15
301*:					
Vonalee	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Threadleaf sedge	10
				Silver sagebrush	10
				Bottlebrush squirreltail	5
Hiland	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Threadleaf sedge	5
				Green needlegrass	5
				Mutton bluegrass	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
302*:					
Vonalee-----------	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread---------------	30
		Normal	1,200	Thickspike wheatgrass---------	20
		Unfavorable	700	Indian ricegrass--------------	15
				Threadleaf sedge--------------	10
				Silver sagebrush--------------	10
				Bottlebrush squirreltail------	5
Slickspots.					
303---------------- Whiteriver	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass------------	35
		Normal	1,100	Needleandthread---------------	15
		Unfavorable	600	Big sagebrush-----------------	15
				Bluebunch wheatgrass----------	10
				Green needlegrass-------------	5
				Mutton bluegrass--------------	5
304*:					
Woosley-----------	Loamy, 15-19 Foothills And Mountains, Southeast.	Favorable	2,000	Idaho fescue------------------	20
		Normal	1,500	Bluebunch wheatgrass----------	20
		Unfavorable	800	Prairie junegrass-------------	10
				Griffith wheatgrass-----------	10
				Big sagebrush-----------------	5
				Threetip sagebrush------------	5
Starley-----------	Shallow Loamy, 15-19 Foothills And Mountains, Southeast.	Favorable	1,400	Bluebunch wheatgrass----------	30
		Normal	1,100	Griffith wheatgrass-----------	15
		Unfavorable	800	Parry danthonia---------------	15
				Threetip sagebrush------------	5
				Black sagebrush---------------	5
305*:					
Worf--------------	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass----------	20
		Normal	900	Western wheatgrass------------	20
		Unfavorable	700	Needleandthread---------------	10
				Mutton bluegrass--------------	10
				Black sagebrush---------------	10
Bowbac------------	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass------------	30
		Normal	1,100	Needleandthread---------------	15
		Unfavorable	600	Bluebunch wheatgrass----------	10
				Big sagebrush-----------------	10
				Green needlegrass-------------	5
				Mutton bluegrass--------------	5
				Douglas rabbitbrush-----------	5
306*:					
Worf--------------	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass----------	20
		Normal	900	Western wheatgrass------------	20
		Unfavorable	700	Needleandthread---------------	10
				Mutton bluegrass--------------	10
				Black sagebrush---------------	10
Briggsdale--------	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass------------	30
		Normal	1,100	Needleandthread---------------	15
		Unfavorable	600	Bluebunch wheatgrass----------	10
				Big sagebrush-----------------	10
				Green needlegrass-------------	5
				Mutton bluegrass--------------	5
				Douglas rabbitbrush-----------	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
307*:					
Worf Variant	Shallow Loamy, 15-19 Northern Plains.	Favorable	1,800	Idaho fescue	20
		Normal	1,400	Bluebunch wheatgrass	20
		Unfavorable	900	Needleandthread	10
				Spike fescue	5
				Western wheatgrass	5
				Green needlegrass	5
				Black sagebrush	5
Cushman Variant	Loamy, 15-19 Northern Plains	Favorable	3,000	Idaho fescue	25
		Normal	2,200	Spike fescue	15
		Unfavorable	1,500	Green needlegrass	15
				Western wheatgrass	15
				Needleandthread	5
				Prairie junegrass	5
				Big sagebrush	5
Peyton	Loamy, 15-19 Northern Plains	Favorable	3,000	Idaho fescue	25
		Normal	2,200	Spike fescue	25
		Unfavorable	1,500	Green needlegrass	25
				Western wheatgrass	20
308*:					
Worfstone	Very Shallow, 10-14 High Plains, Southeast.	Favorable	600	Bluebunch wheatgrass	40
		Normal	450	Western wheatgrass	10
		Unfavorable	250	Bottlebrush squirreltail	10
				Indian ricegrass	10
				Canby bluegrass	5
				Needleandthread	5
				Prairie junegrass	5
				Threadleaf sedge	5
				Black sagebrush	5
McFadden	Shallow Sandy, 10-14 High Plains, Southeast.	Favorable	1,200	Needleandthread	25
		Normal	900	Bluebunch wheatgrass	20
		Unfavorable	700	Threadleaf sedge	15
				Indian ricegrass	10
				Mutton bluegrass	10
				Black sagebrush	5
Lupinto	Shallow Loamy, 10-14 High Plains, Southeast.	Favorable	1,200	Bluebunch wheatgrass	25
		Normal	900	Western wheatgrass	15
		Unfavorable	700	Needleandthread	10
				Black sagebrush	10
				Mutton bluegrass	10
				Big sagebrush	5
				Indian ricegrass	5
				Prairie junegrass	5
309*:					
Zeomont	Sands, 10-14 Northern Plains	Favorable	2,500	Prairie sandreed	35
		Normal	2,000	Sand bluestem	20
		Unfavorable	1,400	Needleandthread	10
				Indian ricegrass	10
				Silver sagebrush	5
				Threadleaf sedge	5

See footnote at end of table.

TABLE 7.--RANGELAND PRODUCTIVITY AND CHARACTERISTIC PLANT COMMUNITIES--Continued

Soil name and map symbol	Range site	Total production		Characteristic vegetation	Composition
		Kind of year	Dry weight		
			Lb/acre		Pct
309*:					
Ryan Park	Sandy, 10-14 High Plains, Southeast.	Favorable	1,500	Needleandthread	30
		Normal	1,200	Thickspike wheatgrass	20
		Unfavorable	700	Indian ricegrass	15
				Threadleaf sedge	10
				Silver sagebrush	10
				Bottlebrush squirreltail	5
310 Zigweid	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
311*:					
Zigweid	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5
Theedle	Loamy, 10-14 High Plains, Southeast.	Favorable	1,400	Western wheatgrass	30
		Normal	1,100	Needleandthread	15
		Unfavorable	600	Bluebunch wheatgrass	10
				Big sagebrush	10
				Green needlegrass	5
				Mutton bluegrass	5

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 8A.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE I

(Dashes indicate that the species is not suited to the soils in the group)

Woody species	Group 1				Group 1K				Group 3				Group 4				Group 4C			
	Precipitation			Irrigated	Precipitation			Irrigated	Precipitation			Irrigated	Precipitation			Irrigated	Precipitation			Irrigated
	5-9"	10-14"	15-19"		5-9"	10-14"	15-19"		5-9"	10-14"	15-19"		5-9"	10-14"	15-19"		5-9"	10-14"	15-19"	
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers*:																				
Austrian pine	---	---	17	22	---	---	---	---	---	---	**16	22	---	---	15	22	---	---	---	22
Black Hills spruce	---	---	**16	21	---	**15	17	22	---	---	**16	22	---	---	---	20	---	---	---	20
Blue spruce	---	**12	16	22	---	---	16	22	---	---	16	22	---	---	---	20	---	---	---	19
Eastern redcedar	---	15	18	23	---	15	17	22	---	10	13	21	---	10	12	20	---	8	11	20
Ponderosa pine	---	**16	18	23	---	**16	18	23	---	**14	16	22	---	**12	15	22	---	**10	12	21
Rocky Mountain juniper	---	10	14	21	---	10	14	21	---	8	10	18	---	8	10	18	---	8	10	18
Scotch pine	---	---	**17	21	---	---	---	---	---	---	**15	20	---	---	---	20	---	---	---	20
Deciduous trees:																				
Boxelder	---	---	**16	21	---	---	---	---	---	---	---	20	---	---	---	19	---	---	---	19
Golden willow	---	**20	**24	31	---	**20	**24	31	---	---	---	29	---	---	---	29	---	---	---	29
Green ash	---	**14	18	28	---	**14	17	27	---	**13	16	28	---	**13	15	28	---	**10	12	25
Hackberry	---	**14	18	26	---	**14	17	26	---	**14	18	24	---	**14	18	24	---	**12	16	23
Honeylocust	---	15	19	28	---	15	19	28	---	14	17	26	---	13	16	26	---	12	14	24
Plains cottonwood	---	**29	**31	41	---	**29	31	41	---	---	---	41	---	---	---	41	---	---	---	41
Russian-olive	**12	15	18	24	**12	16	18	24	---	13	15	23	---	11	14	22	---	9	11	22
Siberian crabapple	---	**11	13	19	---	---	---	---	---	---	12	19	---	---	12	19	---	---	11	19
Siberian elm	---	**20	24	33	---	**20	24	33	---	**18	23	33	---	**17	21	33	---	**15	19	31
Shrubs:																				
American plum	---	---	**7	10	---	---	**7	10	---	---	**7	10	---	---	**7	10	---	---	**7	10
Basin big sagebrush	---	---	---	---	---	---	---	---	2	4	5	---	---	---	---	---	---	---	---	---
Common chokecherry	---	**7	**7	11	---	**7	**7	11	---	**7	**8	11	---	**7	8	11	---	**7	8	11
Fourwing saltbush	2	2	---	---	2	2	---	---	2	2	---	---	2	2	2	3	2	2	---	---
Golden currant	---	---	**4	6	---	---	---	---	---	---	**4	6	---	---	**4	6	---	---	---	6
Greasewood	4	---	---	---	3	3	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Lilac	---	**5	7	10	---	**5	7	10	---	**5	7	10	---	**5	7	10	---	**4	5	9
Nanking cherry	---	**3	5	8	---	---	---	---	---	**3	5	8	---	**3	5	8	---	**3	5	8
Peking cotoneaster	---	**3	5	9	---	---	---	---	---	**3	4	8	---	**3	4	8	---	---	4	8
Redosier dogwood	---	---	4	8	---	---	---	---	---	---	---	8	---	---	---	8	---	---	---	7
Rubber rabbitbrush	3	---	---	---	2	3	---	---	---	---	---	---	---	---	---	---	2	2	---	---
Rugosa rose	---	2	4	6	---	---	---	---	---	3	4	6	---	3	4	6	---	---	3	5
Saskatoon serviceberry	---	---	**4	7	---	---	---	---	---	---	---	5	---	---	---	5	---	---	---	5
Siberian peashrub	---	7	9	14	---	6	9	14	---	7	8	12	---	6	7	12	---	4	5	12
Silver buffaloberry	---	---	**7	12	---	---	**7	12	---	---	**7	11	---	---	**7	10	---	---	---	10
Skunkbush sumac	---	3	5	9	---	3	5	9	---	3	5	9	---	3	5	9	---	3	4	8
Tatarian honeysuckle	---	6	8	11	---	6	8	11	---	5	7	11	---	5	7	11	---	4	6	11
Western sandcherry	---	2	3	3	---	---	---	---	---	2	3	3	---	2	3	3	---	---	---	3

See footnotes at end of table.

TABLE 8A.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE I--Continued

Woody species	Group 5				Group 5K				Group 6G				Group 6R			
	Precipitation				Precipitation				Precipitation				Precipitation			
	5-9"	10-14"	15-19"	Irrigated	5-9"	10-14"	15-19"	Irrigated	5-9"	10-14"	15-19"	Irrigated	5-9"	10-14"	15-19"	Irrigated
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers*:																
Austrian pine	---	---	**16	22	---	---	---	---	---	---	---	16	---	---	**13	22
Black Hills spruce	---	---	---	20	---	---	---	20	---	---	---	20	---	---	---	20
Blue spruce	---	---	---	21	---	---	---	21	---	---	---	21	---	---	---	21
Eastern redcedar	---	10	13	20	---	8	10	20	---	8	10	20	---	8	11	20
Ponderosa pine	---	**13	15	22	---	**10	13	22	---	**10	13	22	---	**11	13	22
Rocky Mountain juniper	---	8	10	17	---	8	10	17	---	8	10	18	---	8	10	18
Scotch pine	---	---	**15	20	---	---	---	---	---	---	13	20	---	---	13	20
Deciduous trees:																
Boxelder	---	---	---	20	---	---	---	---	---	---	---	20	---	---	---	20
Golden willow	---	---	---	29	---	---	---	---	---	---	---	---	---	---	---	29
Green ash	---	**12	15	27	---	**11	13	28	---	---	**13	28	---	**11	14	28
Hackberry	---	---	14	24	---	---	---	25	---	---	---	24	---	---	12	25
Honeylocust	---	12	15	26	---	11	14	28	---	---	13	26	---	14	17	27
Plains cottonwood	---	---	---	41	---	---	---	41	---	---	---	35	---	---	---	35
Russian-olive	---	11	14	23	---	9	11	23	---	10	13	23	---	11	14	24
Siberian crabapple	---	---	12	19	---	---	---	---	---	---	---	19	---	---	**12	19
Siberian elm	---	**17	22	33	---	**16	20	33	---	**15	20	33	---	17	21	33
Shrubs:																
American plum	---	---	**7	10	---	---	---	10	---	---	---	10	---	---	---	10
Basin big sagebrush	2	4	---	---	3	3	---	---	2	3	4	---	2	3	4	---
Common chokecherry	---	**6	8	11	---	---	7	11	---	---	**7	11	---	---	**7	11
Fourwing saltbush	---	2	---	---	2	2	2	---	2	2	2	---	2	2	2	---
Golden currant	---	---	---	6	---	---	---	---	---	---	---	6	---	---	---	6
Greasewood	---	---	---	---	---	3	---	---	---	---	---	---	---	---	---	---
Lilac	---	**5	6	10	---	**4	5	10	---	---	**5	9	---	---	**5	9
Nanking cherry	---	---	**4	8	---	---	---	---	---	---	---	7	---	---	**4	8
Peking cotoneaster	---	---	**4	8	---	---	---	---	---	---	**4	8	---	---	**4	8
Redosier dogwood	---	---	---	8	---	---	---	---	---	---	---	7	---	---	---	7
Rubber rabbitbrush	---	---	---	---	2	2	---	---	2	2	3	---	2	3	3	---
Rugosa rose	---	2	3	6	---	---	---	---	---	2	3	6	---	2	3	6
Saskatoon serviceberry	---	---	---	5	---	---	---	5	---	---	---	5	---	---	---	5
Siberian peashrub	---	5	6	12	---	4	6	12	---	5	6	12	---	5	7	12
Silver buffaloberry	---	---	**6	11	---	---	**6	11	---	---	**5	11	---	---	**7	11
Skunkbush sumac	---	3	5	8	---	3	5	8	---	---	3	8	---	**3	5	8
Tatarian honeysuckle	---	5	7	11	---	4	6	11	---	---	6	11	---	5	7	11
Western sandcherry	---	2	3	3	---	---	---	---	---	---	2	3	---	---	2	3

See footnotes at end of table.

TABLE 8A.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE I--Continued

Woody species	Group 7				Group 8				Group 9G				Group 9N			
	Precipitation				Precipitation				Precipitation				Precipitation			
	5-9"	10-14"	15-19"	Irrigated	5-9"	10-14"	15-19"	Irrigated	5-9"	10-14"	15-19"	Irrigated	5-9"	10-14"	15-19"	Irrigated
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers*:																
Austrian pine	---	---	**12	22	---	---	---	---	---	---	---	---	---	---	---	---
Black Hills spruce	---	---	---	20	---	---	---	21	---	---	---	---	---	---	---	---
Blue spruce	---	---	---	21	---	---	---	21	---	---	---	---	---	---	---	---
Eastern redcedar	---	**7	9	20	---	8	10	20	---	---	10	20	---	---	**7	17
Ponderosa pine	---	---	**11	22	---	**11	13	22	---	---	---	---	---	**9	11	21
Rocky Mountain juniper	---	**6	8	18	---	8	10	17	---	**7	9	18	---	**5	6	16
Scotch pine	---	---	**12	20	---	---	---	---	---	---	---	---	---	---	---	---
Deciduous trees:																
Boxelder	---	---	---	20	---	---	---	---	---	---	---	---	---	---	---	---
Golden willow	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Green ash	---	---	12	28	---	11	13	30	---	---	16	27	---	---	**11	24
Hackberry	---	---	---	24	---	---	---	26	---	---	---	---	---	---	---	---
Honeylocust	---	---	13	26	---	11	14	29	---	14	17	27	---	---	---	---
Plains cottonwood	---	---	---	30	---	---	---	41	---	---	27	41	---	---	---	35
Russian-olive	---	---	**13	23	---	9	11	22	---	13	16	23	---	8	9	22
Siberian crabapple	---	---	---	19	---	---	---	---	---	---	---	---	---	8	---	---
Siberian elm	---	---	16	29	---	17	20	33	---	**16	21	32	---	**10	12	30
Shrubs:																
American plum	---	---	---	10	---	---	---	10	---	---	---	---	---	---	---	---
Basin big sagebrush	---	---	---	---	2	3	---	---	---	---	---	---	---	4	---	---
Common chokecherry	---	---	---	11	---	---	7	11	---	---	---	---	---	---	---	---
Fourwing saltbush	---	---	---	---	2	2	---	---	2	2	2	---	2	3	---	---
Golden currant	---	---	---	6	---	---	---	---	---	3	4	---	---	---	---	---
Greasewood	---	---	---	---	---	---	---	---	2	3	2	---	2	3	---	---
Lilac	---	---	**5	9	---	4	5	10	---	**5	6	10	---	---	5	10
Nanking cherry	---	---	---	7	---	---	---	---	---	---	---	---	---	---	---	---
Peking cotoneaster	---	---	---	8	---	---	---	---	---	---	---	---	---	---	---	---
Redosier dogwood	---	---	---	7	---	---	---	---	---	---	---	---	---	---	---	---
Rubber rabbitbrush	---	**2	3	---	2	2	---	---	2	2	3	---	---	3	---	---
Rugosa rose	---	**2	3	6	---	---	---	---	---	---	---	---	---	---	---	---
Saskatoon serviceberry	---	---	---	5	---	---	---	---	---	---	---	---	---	---	---	---
Siberian peashrub	---	**4	6	12	---	5	6	12	---	5	8	12	---	4	5	10
Silver buffaloberry	---	---	---	11	---	---	6	12	---	---	7	11	---	---	5	11
Skunkbush sumac	---	---	---	---	---	3	5	8	---	3	5	9	---	3	4	9
Tatarian honeysuckle	---	---	5	11	---	5	7	11	---	6	7	11	---	4	5	11
Western sandcherry	---	---	2	3	---	---	---	---	---	---	---	---	---	---	---	---

* New plantings in areas that are prone to high wind need protection from the wind during the 3- to 5-year establishment period. A midwinter watering is also recommended to prevent foliar desiccation.

** Supplemental water is needed during the 3- to 5-year establishment period.

TABLE 8B.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE II

(Dashes indicate that the species is not suited to the soils in the group)

Woody species	Group 1			Group 1K			Group 3			Group 4			Group 4C		
	Precipitation			Precipitation			Precipitation			Precipitation			Precipitation		
	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers*:															
Austrian pine	---	---	22	---	---	---	---	---	22	---	---	22	---	---	---
Blue spruce	---	12	22	---	---	22	---	---	22	---	---	20	---	---	19
Eastern redcedar	---	15	23	---	15	22	---	10	21	---	10	20	---	8	20
Ponderosa pine	---	**16	22	---	**16	23	---	**14	22	---	12	22	---	**9	21
Rocky Mountain juniper	---	10	21	---	10	21	---	8	18	---	8	18	---	8	18
Scotch pine	---	---	21	---	---	---	---	---	20	---	---	20	---	---	---
Deciduous trees:															
Boxelder	---	---	21	---	---	---	---	---	20	---	---	19	---	---	19
Golden willow	---	**20	31	---	**20	31	---	---	30	---	---	29	---	---	29
Green ash	---	**14	28	---	**14	27	---	13	28	---	**13	28	---	**10	25
Honeylocust	---	15	28	---	15	28	---	14	27	---	13	26	---	12	24
Plains cottonwood	---	**28	41	---	**28	41	---	---	41	---	---	41	---	---	41
Russian-olive	**12	15	24	**11	16	24	---	13	23	---	11	23	---	9	22
Siberian crabapple	---	**11	19	---	---	---	---	---	19	---	---	19	---	---	19
Siberian elm	---	**20	33	---	**20	33	---	**18	33	---	**16	33	---	**15	31
Shrubs:															
American plum	---	**7	10	---	**7	10	---	---	11	---	---	10	---	---	10
Basin big sagebrush	2	---	---	---	---	---	2	---	---	2	---	---	---	---	---
Common chokecherry	---	**7	11	---	**7	11	---	**6	11	---	**7	11	---	**7	11
Fourwing saltbush	2	2	3	2	2	3	2	2	---	2	2	3	2	2	3
Golden currant	---	---	6	---	---	---	---	---	6	---	---	6	---	---	6
Greasewood	3	---	---	3	3	---	---	---	---	---	---	---	---	---	---
Lilac	---	**5	10	---	**5	10	---	**5	10	---	**5	10	---	**4	9
Nanking cherry	---	**3	9	---	---	---	---	**3	8	---	**3	8	---	**3	8
Peking cotoneaster	---	**3	---	---	---	---	---	**3	8	---	**3	8	---	---	8
Redosier dogwood	---	---	8	---	---	---	---	---	8	---	---	8	---	---	7
Rubber rabbitbrush	2	---	---	2	2	---	2	---	---	2	2	---	2	2	---
Rugosa rose	---	2	6	---	---	---	---	3	6	---	3	6	---	---	5
Saskatoon serviceberry	---	---	7	---	---	---	---	---	5	---	---	5	---	---	5
Siberian peashrub	---	7	13	---	5	13	---	7	12	---	6	12	---	4	9
Silver buffaloberry	---	---	12	---	---	12	---	---	11	---	---	10	---	---	10
Skunkbush sumac	---	3	9	---	4	9	---	3	9	---	3	9	---	---	8
Tatarian honeysuckle	---	6	11	---	5	11	---	5	11	---	5	11	---	4	11
Western sandcherry	---	2	3	---	---	---	---	2	3	---	2	3	---	---	3

See footnotes at end of table.

TABLE 8B.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE II--Continued

Woody species	Group 5			Group 5K			Group 6G			Group 6R		
	Precipitation			Precipitation			Precipitation			Precipitation		
	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers*:												
Austrian pine	---	---	22	---	---	---	---	---	22	---	---	22
Blue spruce	---	---	21	---	---	21	---	---	21	---	---	21
Eastern redcedar	---	10	20	---	8	20	---	8	20	---	9	20
Ponderosa pine	---	**13	22	---	**11	22	---	**10	22	---	**11	22
Rocky Mountain juniper	---	8	17	---	8	17	---	7	18	---	8	18
Scotch pine	---	---	22	---	---	---	---	---	---	---	---	---
Deciduous trees:												
Boxelder	---	---	20	---	---	---	---	---	20	---	---	20
Golden willow	---	---	29	---	---	---	---	---	---	---	---	29
Green ash	---	**12	26	---	**11	27	---	---	28	---	**11	28
Honeylocust	---	12	26	---	11	28	---	---	26	---	12	27
Plains cottonwood	---	---	41	---	---	41	---	---	35	---	---	35
Russian-olive	---	11	23	---	9	23	---	10	23	---	11	24
Siberian crabapple	---	---	19	---	---	---	---	---	19	---	---	19
Siberian elm	---	**17	33	---	**16	33	---	**15	32	---	**17	32
Shrubs:												
American plum	---	---	10	---	---	10	---	---	10	---	---	10
Basin big sagebrush	2	3	---	2	3	---	2	3	---	2	3	---
Common chokecherry	---	**6	11	---	---	11	---	---	11	---	---	11
Fourwing saltbush	2	2	---	2	2	---	2	2	---	2	2	---
Golden currant	---	---	6	---	---	---	---	---	6	---	---	6
Greasewood	---	---	---	---	3	---	---	---	---	---	---	---
Lilac	---	**5	10	---	**4	10	---	---	9	---	---	9
Nanking cherry	---	---	8	---	---	---	---	---	7	---	---	8
Peking cotoneaster	---	---	8	---	---	---	---	---	8	---	---	7
Redosier dogwood	---	---	8	---	---	---	---	---	7	---	---	7
Rubber rabbitbrush	3	3	---	2	2	---	2	3	---	2	3	---
Rugosa rose	---	2	6	---	---	---	---	2	6	---	2	6
Saskatoon serviceberry	---	---	5	---	---	---	---	---	5	---	---	5
Siberian peashrub	---	5	12	---	4	12	---	5	12	---	6	12
Silver buffaloberry	---	---	12	---	---	11	---	---	11	---	---	11
Skunkbush sumac	---	3	8	---	3	8	---	4	8	---	**3	8
Tatarian honeysuckle	---	5	11	---	4	11	---	---	11	---	**6	11
Western sandcherry	---	2	3	---	---	---	---	---	3	---	---	3

See footnotes at end of table.

TABLE 8B.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE II--Continued

Woody species	Group 7			Group 8			Group 9G			Group 9N		
	Precipitation			Precipitation			Precipitation			Precipitation		
	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated	5-9"	10-14"	Irrigated
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers*:												
Austrian pine	---	---	22	---	---	---	---	---	---	---	---	---
Blue spruce	---	---	21	---	---	21	---	---	---	---	---	---
Eastern redcedar	---	**8	20	---	8	20	---	---	19	---	---	17
Ponderosa pine	---	---	22	---	**11	22	---	---	---	---	**10	21
Rocky Mountain juniper	---	**6	18	---	8	17	---	**7	17	---	**5	16
Scotch pine	---	---	---	---	---	---	---	---	---	---	---	---
Deciduous trees:												
Boxelder	---	---	20	---	---	---	---	---	---	---	---	---
Golden willow	---	---	---	---	---	---	---	---	---	---	---	---
Green ash	---	---	28	---	11	30	---	---	27	---	---	23
Honeylocust	---	---	26	---	11	29	---	14	27	---	---	---
Plains cottonwood	---	---	30	---	---	41	---	---	41	---	---	35
Russian-olive	---	---	23	---	9	23	---	13	23	---	8	22
Siberian crabapple	---	---	19	---	---	---	---	---	---	---	---	---
Siberian elm	---	---	32	---	17	33	---	17	32	---	**10	30
Shrubs:												
American plum	---	---	10	---	---	10	---	---	---	---	---	---
Basin big sagebrush	---	---	---	2	3	---	---	---	---	2	3	---
Common chokecherry	---	---	11	---	---	11	---	---	---	---	---	---
Fourwing saltbush	---	---	---	2	2	---	2	2	---	2	2	---
Golden currant	---	---	6	---	---	---	---	---	---	---	---	---
Greasewood	---	---	---	---	---	---	2	4	---	---	2	---
Lilac	---	---	9	---	4	10	---	**5	10	---	---	10
Nanking cherry	---	---	7	---	---	---	---	---	---	---	---	---
Peking cotoneaster	---	---	8	---	---	---	---	---	---	---	---	---
Redosier dogwood	---	---	7	---	---	---	---	---	---	---	---	---
Rubber rabbitbrush	2	3	---	2	3	---	2	3	---	2	2	---
Rugosa rose	---	---	6	---	---	---	---	---	---	---	---	---
Saskatoon serviceberry	---	---	5	---	---	---	---	---	---	---	---	---
Siberian peashrub	---	---	12	---	5	12	---	6	12	---	4	10
Silver buffaloberry	---	---	11	---	---	12	---	---	11	---	---	11
Skunkbush sumac	---	---	8	---	3	8	---	3	9	---	3	9
Tatarian honeysuckle	---	---	11	---	5	11	---	6	11	---	4	11
Western sandcherry	---	---	3	---	---	---	---	---	---	---	---	---

* New plantings in areas that are prone to high wind need protection from the wind during the 3- to 5-year establishment period. A midwinter watering is also recommended to prevent foliar desiccation.

** Supplemental water is needed during the 3- to 5-year establishment period.

TABLE 8C.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE III

(Dashes indicate that the species is not suited to the soils in the group)

Woody species	Group 1				Group 1K				Group 3				Group 4			
	Precipitation				Precipitation				Precipitation				Precipitation			
	10-14"	15-19"	20+"	Irrigated	10-14"	15-19"	20+"	Irrigated	10-14"	15-19"	20+"	Irrigated	10-14"	15-19"	20+"	Irrigated
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers:																
Blue spruce	*14	16	20	22	*13	16	20	22	---	16	18	22	---	14	16	22
Douglas fir	---	---	---	---	---	---	---	---	---	20	25	26	---	16	20	26
Engelmann spruce	*14	16	25	26	---	---	---	---	---	16	18	22	---	14	16	22
Lodgepole pine	---	---	---	---	---	---	---	---	---	20	25	26	---	16	20	26
Ponderosa pine	---	---	---	---	---	---	---	---	*12	16	18	24	*12	15	17	24
Rocky Mountain juniper	---	---	---	---	---	---	---	---	9	10	12	20	9	11	13	20
Scotch pine	---	---	---	---	---	---	---	---	---	15	18	22	---	---	15	22
Subalpine fir	---	*12	15	15	---	---	---	---	---	---	13	13	---	---	12	12
White fir	*14	17	22	26	---	---	---	---	---	---	---	---	---	---	12	12
Deciduous trees:																
Boxelder	---	16	18	22	---	---	---	---	---	14	16	22	---	*13	15	22
Golden willow	*21	24	26	32	*19	23	26	32	---	---	---	32	---	---	---	32
Green ash	14	18	22	30	14	18	22	30	12	16	18	30	13	15	17	30
Narrowleaf cottonwood	*22	27	36	42	---	---	---	---	---	---	---	38	---	---	---	35
Plains cottonwood	*22	27	36	42	*20	25	36	42	---	---	---	---	---	---	---	36
Russian-olive	15	18	22	25	15	18	20	25	13	15	16	25	11	13	16	25
Siberian crabapple	*11	12	15	19	---	---	---	---	---	12	15	19	---	---	---	---
Siberian elm	*20	27	28	36	*20	27	28	35	*20	26	28	35	*19	24	26	36
White willow	*21	24	26	32	*19	23	26	32	---	---	---	32	---	---	---	32
Shrubs:																
American plum	---	*6	6	11	---	*6	7	11	---	*6	7	11	---	*6	7	11
Basin big sagebrush	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Common chokecherry	*7	8	8	12	*7	8	8	12	*7	8	9	12	*7	8	8	12
Common snowberry	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Fourwing saltbush	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Golden currant	---	*4	4	4	---	---	---	---	---	4	4	4	---	3	4	4
Greasewood	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Lilac	*4	6	6	10	*4	6	6	10	*4	6	7	10	*4	6	7	10
Redosier dogwood	---	---	6	8	---	---	---	---	---	---	5	6	---	---	6	7
Rocky Mountain maple	---	7	9	10	---	---	---	---	---	---	---	---	---	---	---	---
Rubber rabbitbrush	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Rugosa rose	3	4	4	4	3	4	4	4	4	4	4	4	3	4	4	4
Saskatoon serviceberry	---	4	4	4	---	---	---	---	---	4	4	5	---	---	4	5
Siberian peashrub	5	7	7	10	5	7	7	10	5	7	7	9	6	7	8	9
Silver buffaloberry	---	*7	9	11	---	*7	9	11	---	*7	8	11	---	*7	9	11
Skunkbush sumac	3	5	6	7	3	5	6	7	3	4	6	7	4	6	6	7
Tatarian honeysuckle	5	6	7	11	5	6	7	11	5	7	8	11	5	6	9	11
Woods rose	3	4	4	4	3	4	4	4	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 8C.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE III--Continued

Woody species	Group 4C				Group 5				Group 5K				Group 6G			
	Precipitation				Precipitation				Precipitation				Precipitation			
	10-14"	15-19"	20+"	Irrigated	10-14"	15-19"	20+"	Irrigated	10-14"	15-19"	20+"	Irrigated	10-14"	15-19"	20+"	Irrigated
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers:																
Blue spruce	---	---	17	20	---	16	20	22	---	---	16	20	---	---	14	18
Douglas fir	---	---	---	---	---	---	18	24	---	---	---	---	---	---	---	---
Engelmann spruce	---	---	17	20	---	17	21	24	---	---	---	---	---	---	14	18
Lodgepole pine	---	---	---	---	---	17	22	26	---	---	---	---	---	---	16	22
Ponderosa pine	*10	12	14	22	*12	17	19	24	*10	12	14	22	*10	14	16	22
Rocky Mountain juniper	9	10	12	20	9	11	13	18	9	10	12	17	9	10	12	18
Scotch pine	---	---	---	20	---	---	18	22	---	---	---	---	---	---	---	21
Subalpine fir	---	---	---	---	---	---	13	13	---	---	---	---	---	---	---	---
White fir	---	---	---	---	---	---	18	24	---	---	---	---	---	---	---	22
Deciduous trees:																
Boxelder	---	---	---	20	---	---	16	20	---	---	---	---	---	---	---	18
Golden willow	---	---	---	28	---	---	---	27	---	---	---	27	---	---	---	---
Green ash	11	12	14	27	12	16	18	26	10	12	14	26	---	12	14	26
Narrowleaf cottonwood	---	---	---	32	---	---	---	33	---	---	---	31	---	---	---	---
Plains cottonwood	---	---	---	33	---	---	---	33	---	---	---	31	---	---	---	32
Russian-olive	10	11	13	22	10	13	15	23	9	11	13	25	10	12	14	23
Siberian crabapple	---	12	15	19	---	12	15	19	---	---	---	---	---	---	---	---
Siberian elm	*19	21	24	32	*20	24	26	33	*17	21	24	31	*16	20	24	29
White willow	---	---	---	27	---	---	---	27	---	---	---	27	---	---	---	---
Shrubs:																
American plum	---	*6	6	9	---	6	7	10	---	---	---	11	---	---	7	9
Basin big sagebrush	2	3	---	---	2	3	---	---	3	3	---	---	3	3	---	---
Common chokecherry	*7	8	8	11	*7	8	9	11	---	7	9	10	---	7	8	11
Common snowberry	---	---	---	---	---	3	3	3	---	3	3	3	---	---	---	---
Fourwing saltbush	---	---	---	---	---	---	---	---	2	2	---	---	---	---	---	---
Golden currant	---	3	3	4	---	*3	4	4	---	---	---	---	---	---	4	4
Greasewood	---	---	---	---	---	---	---	---	3	3	---	---	---	---	---	---
Lilac	*4	5	6	10	*5	6	7	9	*4	6	7	10	---	5	7	9
Redosier dogwood	---	---	---	7	---	---	6	6	---	---	---	---	---	---	---	---
Rocky Mountain maple	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Rubber rabbitbrush	2	3	---	---	---	---	---	---	2	---	---	---	2	3	---	---
Rugosa rose	---	3	3	4	3	4	4	4	4	---	---	---	---	3	4	4
Saskatoon serviceberry	---	---	---	---	---	---	4	5	---	---	---	---	---	---	4	6
Siberian peashrub	4	5	7	8	6	7	8	9	6	7	7	9	6	7	8	9
Silver buffaloberry	---	*5	7	11	---	*7	8	11	---	*6	8	11	---	*6	8	10
Skunkbush sumac	3	4	5	6	4	5	5	6	---	---	---	---	---	4	6	7
Tatarian honeysuckle	4	6	8	11	5	7	8	11	5	7	8	11	5	7	8	11
Woods rose	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 8C.--EXPECTED HEIGHTS OF SELECTED WOODY SPECIES AT AGE 20, BY SUITABILITY GROUP, IN PLANTING ZONE III--Continued

Woody species	Group 6R				Group 8				Group 9G			
	Precipitation				Precipitation				Precipitation			
	10-14"	15-19"	20+"	Irrigated	10-14"	15-19"	20+"	Irrigated	10-14"	15-19"	20+"	Irrigated
	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft	Ft
Conifers:												
Blue spruce	---	---	16	20	---	---	16	21	---	---	---	---
Douglas fir	---	---	18	20	---	---	---	---	---	---	---	---
Engelmann spruce	---	---	16	20	---	---	---	---	---	---	---	---
Lodgepole pine	---	16	19	25	---	---	---	---	---	---	---	---
Ponderosa pine	*12	17	19	22	*11	12	16	22	---	---	---	---
Rocky Mountain juniper	9	11	13	17	8	10	13	18	*7	8	9	18
Scotch pine	---	---	18	21	---	---	---	---	---	---	---	---
Subalpine fir	---	---	---	---	---	---	---	---	---	---	---	---
White fir	---	---	17	21	---	---	---	---	---	---	---	---
Deciduous trees:												
Boxelder	---	---	---	20	---	---	---	---	---	---	---	---
Golden willow	---	---	---	---	---	---	---	25	---	---	28	34
Green ash	11	13	15	24	11	13	16	29	13	16	19	28
Narrowleaf cottonwood	---	---	---	33	---	---	---	32	---	---	---	---
Plains cottonwood	---	---	---	---	---	---	---	---	---	---	32	42
Russian-olive	11	13	15	22	9	11	14	21	14	16	19	24
Siberian crabapple	---	---	---	---	---	---	---	---	---	---	---	---
Siberian elm	*19	22	25	31	*16	19	23	33	*19	22	27	33
White willow	---	---	---	27	---	---	---	25	---	---	27	34
Shrubs:												
American plum	---	---	6	8	---	---	---	---	---	---	---	---
Basin big sagebrush	3	3	---	---	3	3	---	---	---	---	---	---
Common chokecherry	---	7	8	11	---	---	---	---	---	---	---	---
Common snowberry	---	2	3	3	---	3	3	3	---	---	---	---
Fourwing saltbush	---	---	---	---	2	2	---	---	2	2	---	---
Golden currant	---	3	3	4	---	---	---	---	---	---	---	---
Greasewood	---	---	---	---	---	---	---	---	2	4	---	---
Lilac	---	5	6	8	*4	6	7	10	*5	6	7	10
Redosier dogwood	---	---	6	8	---	---	---	---	---	---	---	---
Rocky Mountain maple	---	---	---	---	---	---	---	---	---	---	---	---
Rubber rabbitbrush	2	3	---	---	2	3	---	---	2	2	---	---
Rugosa rose	---	3	3	4	---	---	---	---	---	---	---	---
Saskatoon serviceberry	---	---	4	5	---	---	---	---	---	---	---	---
Siberian peashrub	5	7	8	12	5	6	7	12	---	---	---	---
Silver buffaloberry	---	*7	8	11	---	*5	8	12	---	7	8	11
Skunkbush sumac	3	4	5	8	3	5	7	9	---	5	6	7
Tatarian honeysuckle	5	7	8	11	5	6	8	11	5	6	7	11
Woods rose	---	---	---	---	---	---	---	---	---	---	---	---

* Supplemental water is needed during the 3- to 5-year establishment period.

TABLE 9.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES

Soil name and map symbol	Suitability group	Planting zone
101:		
Absher	9N	II
102:		
Adel	3	III
Pagosa	4	III
103:		
Alcova	6G	II
Rock River	3	II
104:		
Alcova	6G	II
Stunner	3	II
105:		
Alflack	6R	III
Foxton	6R	III
106:		
Alflack	6R	III
Irson	10	III
Foxton Variant	3	III
107:		
Almy	8	II
108:		
Amodac	9N	I
109:		
Amodac	9N	I
Keyner	9N	I
110:		
Aquic Ustifluvents	9G	I
111:		
Aquic Ustifluvents	9G	I
Orpha	7	I
112:		
Arvada	9N	I
Absted	9N	I
Slickspots	9N	I
113:		
Arvada	9N	I
Slickspots	10	I

TABLE 9.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
114:		
Bachus	6R	III
Nathrop	6R	III
115:		
Bachus	6R	III
Clayburn	3	III
116:		
Bachus	6R	III
Pagosa	4	III
117:		
Badland	10	II
118:		
Badwater	6G	III
Rubble land	10	III
119:		
Barnum	9N	I
Redbank	7	I
120:		
Bateson	6G	II
121:		
Bessemer	6G	I
122 Bessemer	6G	I
123:		
Bessemer	6G	I
Urban land.		
124:		
Blackdraw	9N	I
125:		
Blackdraw	9N	I
Lolite	10	I
Gullied land	---	---
126:		
Blazon	10	II
Worfman	10	II
127:		
Blazon	10	II
Cragosen	10	II

TABLE 9.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
127:		
Worfman------------------	10	II
128:		
Boettcher----------------	6R	II
Brownsto-----------------	6G	II
129:		
Boettcher----------------	6R	II
Pinelli------------------	4C	II
Worfman------------------	10	II
130:		
Bosler-------------------	6G	II
Alcova-------------------	6G	II
131:		
Bosler-------------------	6G	I
Hiland-------------------	5K	I
132:		
Bowbac-------------------	6R	I
Hiland-------------------	5K	I
133:		
Bowbac-------------------	6R	I
Hiland-------------------	5K	I
Worf---------------------	10	I
134:		
Bowbac-------------------	6R	I
Taluce-------------------	10	I
Terro--------------------	6R	I
135:		
Bridger------------------	4	III
136:		
Brokenhorn---------------	4C	I
Hyshot-------------------	9N	I
137:		
Brownsto-----------------	6G	II
Lupinto------------------	6G	II
138:		
Buffcreek----------------	6G	I
Redarrow-----------------	10	I

TABLE 9.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
139:		
Cabin-------------------	6G	III
Herbman-----------------	10	III
140:		
Cadoma------------------	9N	I
Renohill----------------	6R	I
Samday------------------	10	I
141:		
Cambria-----------------	8	I
142:		
Cambria-----------------	8	I
Zigweid-----------------	8	I
143:		
Cambria-----------------	8	I
Zigweid-----------------	8	I
144:		
Castner-----------------	10	III
Chincap-----------------	6R	III
Rock outcrop.		
145:		
Castner-----------------	10	III
Rock outcrop.		
146:		
Cavegulch---------------	9N	I
147:		
Cavegulch---------------	9N	I
Brokenhorn--------------	4C	I
148:		
Chalkcreek--------------	8	II
149:		
Chipendale--------------	9N	I
Chipenhill--------------	10	I
150:		
Chipendale--------------	9N	I
Razsun------------------	6R	I
151:		
Chipenhill--------------	10	I

TABLE 9.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
152:		
Chipenhill	10	I
Rock outcrop.		
153:		
Chittum	10	III
Nielsen	10	III
Rock outcrop.		
154:		
Chittum	10	III
Sneffels	6R	III
155:		
Clarkelen	5K	I
156:		
Clayburn	3	III
Moslander	1K	III
157:		
Coalmont	6R	II
Milren	4C	II
Cragosen	10	II
158:		
Connerton	8	I
159:		
Copeman	5K	I
160:		
Crago	6G	II
161:		
Crago	6G	II
Pensore	10	II
162:		
Cragosen	10	II
163:		
Cragosen	10	II
Chalkcreek	8	II
164:		
Cragosen Variant	10	II
Brownsto Variant	6R	II
165:		
Curecanti	6G	II

TABLE 9.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
166:		
Curecanti Variant	6R	III
167:		
Cushman	6R	I
Forkwood	3	I
168:		
Cushool	6R	II
Worfstone	10	II
169:		
Decross	3	III
Woosley	6R	III
170:		
Delphill	6R	II
Blazon	10	II
171:		
Delplain	10	II
Rock outcrop.		
172:		
Diamondville	6R	II
Worfman	10	II
173:		
Docpar	8	I
174:		
Draknab	7	I
175:		
Dune land	---	---
176:		
Edlin	5K	II
Rock River	3	II
Bosler	6G	II
177:		
Edlin	5K	II
Ryan Park	5	II
178:		
Effington	9N	I
Uffens	9N	I
179:		
Enos	6R	I

TABLE 9.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
179:		
Wallson	5K	I
180:		
Farlow	6G	III
Starley	10	III
Rock outcrop.		
181:		
Farlow	6G	III
Starley	10	III
182:		
Fiveoh	5K	II
Thermopolis	10	II
183:		
Forelle	3	II
184:		
Forelle	3	II
Diamondville	6R	II
185:		
Forelle	3	II
Lupinto	6G	II
186:		
Forkwood	3	I
Keyner	9N	I
187:		
Forkwood	3	I
Ulm	4C	I
188:		
Forkwood	3	I
Zigweid	8	I
189:		
Gateridge	10	III
Taluce Variant	10	III
190:		
Griffy	5K	I
191:		
Griffy	5K	I
Emblem	6G	I

TABLE 9.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
192:		
Grimstone	6R	III
Grimstone Variant	6R	III
193:		
Haverdad	8	I
194:		
Haverdad	8	I
Clarkelen	5K	I
195:		
Haverdad	9N	I
Clarkelen	9N	I
196:		
Havermom	9N	II
197:		
Hawkstone	5	II
198:		
Hazton	10	III
Rock outcrop.		
199:		
Hiland	5K	I
200:		
Hiland	5K	I
201:		
Hiland	5K	I
202:		
Inchau	6R	III
Clayburn	3	III
Chittum	10	III
203:		
Inchau	6R	III
Farlow	6G	III
204:		
Irson	10	III
205:		
Irson	10	III
Kezar	6R	III
Rock outcrop.		
206:		
Irson	10	III

TABLE 9.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
206:		
Sebud	6G	III
207:		
Keeline	5K	I
Taluce	10	I
Rock outcrop.		
208:		
Keyner	9N	I
209:		
Keyner	9N	I
Absted	9N	I
Slickspots	10	I
210:		
Keyner	9N	I
Hiland	5K	I
211:		
Kezar	6R	III
Irson	10	III
Clayburn	3	III
212:		
Lander	1K	II
213:		
Leavitt	3	III
Coutis	3	III
214:		
Lolite	10	I
Rock outcrop.		
215:		
Lolite	10	I
Rock outcrop.		
216:		
Lonebear	4C	I
217:		
Lupinto	6G	II
Alcova	6G	II
218:		
Lupinto Family	6G	II

TABLE 9.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
219:		
McFadden	5K	II
Edlin	5K	II
Blackhall	10	II
220:		
Middlewood	10	II
Kather	6R	II
221:		
Milren	4C	II
Bosler	6G	II
Rock River	3	II
222:		
Mudray	10	I
Bributte	10	I
Birdsley	10	I
223:		
Nathrop	6R	III
Starley	10	III
224:		
Neldore	10	II
Moyerson	10	II
Rock outcrop.		
225:		
Nunnston	4	III
226:		
Oceanet	10	I
Persayo	10	I
227:		
Orella	10	I
Cadoma	9N	I
Petrie	9N	I
228:		
Orella	10	I
Rock outcrop.		
229:		
Orpha	7	I

TABLE 9.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
230:		
Orpha	7	I
Tullock	7	I
Rock outcrop.		
231:		
Orpha	7	I
Vonalee	5	I
Roughlock	8	I
232:		
Persayo	10	I
Greybull	6R	I
233:		
Pesmore	6R	II
Asholler	10	II
Rock outcrop.		
234:		
Petrie	9N	I
235:		
Petrie	9G	I
Zigweid	9G	I
236:		
Petrie	9N	I
Arvada	9N	I
237:		
Peyton	3	III
Holderness	4	III
238:		
Pits and dumps	---	---
239:		
Pokeman	6R	I
Threetop	6R	I
240:		
Poposhia	5K	II
Blazon	10	II
241:		
Rawlins	5K	II
McFadden	5K	II

TABLE 9.--WINDBREAK SUITABILITY GROUPS
AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
241:		
Blackhall	10	II
242:		
Rawlins	5K	II
Rock River	3	II
243:		
Redsun	10	I
Rock outcrop.		
244:		
Redsun	10	I
Rock outcrop.		
Redbow	6R	I
245:		
Rekop	10	I
Rock outcrop.		
246:		
Relsob	5	II
Peyton	3	II
247:		
Rencot	10	II
Blazon	10	II
248:		
Rencot	10	III
Rock outcrop.		
249:		
Rencot	10	III
Duffson	6R	III
250:		
Rencot	10	III
Thermopolis	10	III
Rock outcrop.		
251:		
Rivra	6G	I
252:		
Rivra	6G	I
Urban land.		
253:		
Rock outcrop.		

TABLE 9.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
254:		
Rock outcrop.		
Birdsley	10	II
255:		
Rock outcrop.		
Cathedral	10	II
256:		
Rock outcrop.		
Ustic Torriorthents	10	II
Rubble land	---	---
257:		
Rock River	3	II
258:		
Rock River	3	II
Hawkstone	5	II
259:		
Rock River	3	II
Pinelli	4C	II
Blazon	10	II
260:		
Rock River	3	II
Rawlins	5K	II
Brownsto	6G	II
261:		
Rock River	3	II
Ryan Park	5	II
McFadden	5K	II
262:		
Rock River	3	II
Worfman	10	II
263:		
Rock River	3	II
Ryan Park	5	II
Hawkstone	5	II
264:		
Roughlock	8	I

TABLE 9.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
265:		
Roughlock	8	I
Redbow	6R	I
Redspear	10	I
266:		
Roughlock	8	I
Buffcreek	6G	I
267:		
Rubble land	---	---
Ustic Torriorthents	10	II
268:		
Ryan Park	5	II
269:		
Ryan Park	5	II
Elk Mountain	6R	II
270:		
Saddle	6R	I
Griffy	5K	I
271:		
Salt flats	10	II
272:		
Samday	10	I
273:		
Savageton	6R	I
Samday	10	I
274:		
Shingle	10	I
Samday	10	I
275:		
Shingle	10	I
Taluce	10	I
Rock outcrop.		
276:		
Shingle	10	I
Theedle	6R	I
277:		
Silhouette	4C	I

TABLE 9.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
278:		
Silhouette	4C	I
Petrie	9N	I
279:		
Starley	10	III
Rock outcrop.		
280:		
Stunner	3	II
Pinelli	4C	II
281:		
Sunup	10	I
Kishona	8	I
Rock outcrop.		
282:		
Terro	6R	I
Vonalee	5	I
283:		
Theedle	6R	I
Shingle	10	I
Kishona	8	I
284:		
Threetop	6R	I
Sunup	10	I
Frontier	10	I
285:		
Tisworth	9N	II
286:		
Travson	10	I
Rock outcrop.		
287:		
Typic Fluvaquents	1K	I
Aquic Ustifluvents	9G	I
288:		
Typic Haplaquolls	1K	II
289:		
Typic Torrifluvents	9G	II
290:		
Uffens, thick surface	9N	I

TABLE 9.--WINDBREAK SUITABILITY GROUPS
AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
290:		
Uffens	9N	I
291:		
Uffens	9N	I
Typic Torrifluvents	9G	II
292:		
Ulm	4C	I
293:		
Ulm	4C	I
Absted	9N	I
294:		
Ulrant	5	III
295:		
Urban land.		
Clarkelen	5K	I
296:		
Urban land.		
Docpar	8	I
297:		
Urban land.		
Savageton	6R	I
Samday	10	I
298:		
Urban land.		
Silhouette	4C	I
299:		
Urban land.		
Theedle	6R	I
Shingle	10	I
300:		
Vonalee	5	I
301:		
Vonalee	5	I
Hiland	5K	I
302:		
Vonalee	5	I
Slickspots	10	I

TABLE 9.--WINDBREAK SUITABILITY GROUPS AND PLANTING ZONES--Continued

Soil name and map symbol	Suitability group	Planting zone
303:		
Whiteriver	4C	II
304:		
Woosley	6R	III
Starley	10	III
305:		
Worf	10	I
Bowbac	6R	I
306:		
Worf	10	I
Briggsdale	6R	I
307:		
Worf Variant	10	III
Cushman Variant	6R	III
Peyton	3	III
308:		
Worfstone	10	II
McFadden	5K	II
Lupinto	6G	II
309:		
Zeomont	7	II
Ryan Park	5	II
310:		
Zigweid	8	I
311:		
Zigweid	8	I
Theedle	6R	I
312:		
Zigweid	8	I
Urban land.		

TABLE 10.--RECREATIONAL DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated)

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
101 Absher	Severe: flooding, excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
102*:				
Adel	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Pagosa	Moderate: percs slowly.	Moderate: percs slowly.	Severe: slope.	Slight.
103*:				
Alcova	Slight	Slight	Moderate: slope, small stones.	Slight.
Rock River	Slight	Slight	Moderate: slope.	Slight.
104*:				
Alcova	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Stunner	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
105*:				
Alflack	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Foxton	Slight	Slight	Severe: slope.	Severe: erodes easily.
106*:				
Alflack	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: large stones, slope.	Slight.
Irson	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Slight.
Foxton Variant	Slight	Slight	Moderate: slope.	Slight.
107 Almy	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
108 Amodac	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Slight.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
109*:				
Amodac	Slight	Slight	Severe: slope.	Severe: erodes easily.
Keyner	Severe: excess sodium.	Severe: excess sodium.	Severe: slope, excess sodium.	Slight.
110 Aquic Ustifluvents	Severe: flooding, wetness, excess salt.	Severe: excess salt.	Severe: wetness, excess salt.	Moderate: wetness.
111*:				
Aquic Ustifluvents	Severe: flooding, wetness, excess salt.	Severe: excess salt.	Severe: wetness, excess salt.	Moderate: wetness.
Orpha	Severe: too sandy.	Severe: too sandy.	Severe: slope, too sandy.	Severe: too sandy.
112*:				
Arvada	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight.
Absted	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight.
Slickspots.				
113*:				
Arvada	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
Slickspots.				
114*:				
Bachus	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Nathrop	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
115*:				
Bachus	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Clayburn	Slight	Slight	Moderate: slope, small stones.	Slight.
116*:				
Bachus	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Pagosa	Moderate: slope, percs slowly.	Moderate: slope, percs slowly.	Severe: slope.	Slight.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
117 Badland	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
118*:				
Badwater	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Moderate: slope.
Rubble land	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, small stones.
119*:				
Barnum	Severe: flooding.	Moderate: excess salt.	Moderate: small stones, flooding.	Slight.
Redbank	Severe: flooding.	Slight	Moderate: small stones, flooding.	Slight.
120 Bateson	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, dusty.	Moderate: dusty.
121 Bessemer	Slight	Slight	Moderate: slope, small stones.	Slight.
122 Bessemer	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight.
123*:				
Bessemer	Moderate: small stones.	Moderate: small stones.	Severe: small stones.	Slight.
Urban land.				
124 Blackdraw	Slight	Slight	Severe: slope.	Severe: erodes easily.
125*:				
Blackdraw	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.
Lolite	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.
Gullied land.				
126*:				
Blazon	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope, dusty.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
126*:				
Worfman	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Moderate: dusty.
127*:				
Blazon	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.
Cragosen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope, dusty.
Worfman	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope, dusty.
128*:				
Boettcher	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Moderate: slope.
Brownsto	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Moderate: large stones, slope, dusty.
129*:				
Boettcher	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, depth to rock.	Moderate: dusty.
Pinelli	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
Worfman	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Moderate: dusty.
130*:				
Bosler	Slight	Slight	Severe: slope.	Slight.
Alcova	Slight	Slight	Moderate: slope, small stones.	Slight.
131*:				
Bosler	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Hiland	Slight	Slight	Moderate: slope.	Slight.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
132*:				
Bowbac	Slight	Slight	Severe: slope.	Slight.
Hiland	Slight	Slight	Moderate: slope.	Slight.
133*:				
Bowbac	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Hiland	Slight	Slight	Severe: slope.	Slight.
Worf	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight.
134*:				
Bowbac	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Taluce	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight.
Terro	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
135 Bridger	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
136*:				
Brokenhorn	Slight	Slight	Severe: slope.	Slight.
Hyshot	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
137*:				
Brownsto	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: slope.
Lupinto	Moderate: slope, small stones, dusty.	Moderate: slope, small stones, dusty.	Severe: slope, small stones.	Moderate: dusty.
138*:				
Buffcreek	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Severe: slope, small stones.	Moderate: dusty.
Redarrow	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
139*:				
Cabin	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Herbman	Severe: slope, large stones, depth to rock.	Severe: slope, large stones, depth to rock.	Severe: large stones, slope, small stones.	Severe: large stones, slope.
140*:				
Cadoma	Slight	Slight	Severe: slope.	Slight.
Renohill	Slight	Slight	Moderate: slope, depth to rock.	Slight.
Samday	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.
141 Cambria	Slight	Slight	Moderate: slope.	Slight.
142*:				
Cambria	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
Zigweid	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
143*:				
Cambria	Slight	Slight	Moderate: slope.	Slight.
Zigweid	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
144*:				
Castner	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.
Chincap	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
145*:				
Castner	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
145*:				
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.
146 Cavegulch	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.
147*:				
Cavegulch	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.
Brokenhorn	Slight	Slight	Severe: slope.	Slight.
148 Chalkcreek	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.
149*:				
Chipendale	Slight	Slight	Severe: slope.	Slight.
Chipenhill	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.
150*:				
Chipendale	Slight	Slight	Severe: slope.	Slight.
Razsun	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
151 Chipenhill	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope.
152*:				
Chipenhill	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
153*:				
Chittum	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight.
Nielsen	Severe: large stones, depth to rock.	Severe: large stones, depth to rock.	Severe: large stones, slope, small stones.	Slight.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
153*:				
Rock outcrop	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight.
154*:				
Chittum	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
Sneffels	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
155 Clarkelen	Severe: flooding.	Slight	Moderate: slope.	Slight.
156*:				
Clayburn	Slight	Slight	Moderate: slope, small stones.	Slight.
Moslander	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness, flooding.	Severe: wetness.
157*:				
Coalmont	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Milren	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
Cragosen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope, dusty.
158 Connerton	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.
159 Copeman	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
160 Crago	Moderate: slope, small stones, dusty.	Moderate: slope, small stones, dusty.	Severe: slope, small stones.	Moderate: dusty.
161*:				
Crago	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope.
Pensore	Severe: slope, large stones, depth to rock.	Severe: slope, large stones, depth to rock.	Severe: large stones, slope, small stones.	Moderate: large stones, slope, dusty.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
162------------------- Cragosen	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope, dusty.
163*:				
Cragosen-------------	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.
Chalkcreek-----------	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.
164*:				
Cragosen Variant-----	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: small stones.
Brownsto Variant-----	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
165------------------- Curecanti	Severe: flooding.	Moderate: large stones, small stones.	Severe: large stones, slope, small stones.	Slight.
166------------------- Curecanti Variant	Severe: slope, large stones.	Severe: slope, large stones.	Severe: large stones, slope, small stones.	Moderate: large stones, slope.
167*:				
Cushman--------------	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Forkwood-------------	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
168*:				
Cushool--------------	Slight---------------	Slight---------------	Moderate: slope, depth to rock.	Slight.
Worfstone------------	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight.
169*:				
Decross--------------	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Woosley--------------	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
170*:				
Delphill	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Blazon	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope, dusty.
171*:				
Delplain	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: too clayey, slope.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.
172*:				
Diamondville	Slight	Slight	Severe: slope.	Slight.
Worfman	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Moderate: dusty.
173 Docpar	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
174 Draknab	Severe: flooding.	Slight	Moderate: slope.	Slight.
175: Dune land.				
176*:				
Edlin	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Rock River	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Bosler	Slight	Slight	Severe: slope.	Slight.
177*:				
Edlin	Slight	Slight	Severe: slope.	Slight.
Ryan Park	Slight	Slight	Severe: slope.	Slight.
178*:				
Effington	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight.
Uffens	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
179*:				
Enos	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Wallson	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
180*:				
Farlow	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: large stones, slope.
Starley	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
181*:				
Farlow	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Moderate: slope.
Starley	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: large stones, slope.
182*:				
Fiveoh	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Thermopolis	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope, dusty.
183 Forelle	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
184*:				
Forelle	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
Diamondville	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
185*:				
Forelle	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
185*:				
Lupinto	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, dusty.
186*:				
Forkwood	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.
Keyner	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
187*:				
Forkwood	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
Ulm	Slight	Slight	Slight	Slight.
188*:				
Forkwood	Slight	Slight	Severe: slope.	Slight.
Zigweid	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
189*:				
Gateridge	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
Taluce Variant	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
190 Griffy	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
191*:				
Griffy	Slight	Slight	Moderate: slope, small stones.	Slight.
Emblem	Slight	Slight	Moderate: slope, small stones.	Slight.
192*:				
Grimstone	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Grimstone Variant	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
193 Haverdad	Severe: flooding.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
194*, 195*:				
Haverdad	Severe: flooding.	Moderate: dusty.	Moderate: dusty.	Moderate: dusty.
Clarkelen	Severe: flooding.	Slight	Slight	Slight.
196 Havermom	Severe: flooding.	Slight	Moderate: slope.	Slight.
197 Hawkstone	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
198*:				
Hazton	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
199 Hiland	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
200, 201 Hiland	Slight	Slight	Moderate: slope.	Slight.
202*:				
Inchau	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Clayburn	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Chittum	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight.
203*:				
Inchau	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Farlow	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
204 Irson	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.
205*:				
Irson	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
205*:				
Kezar	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
206*:				
Irson	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Severe: large stones, slope.
Sebud	Severe: slope.	Severe: slope.	Severe: large stones, slope, small stones.	Severe: slope.
207*:				
Keeline	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Taluce	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
208 Keyner	Severe: excess sodium.	Severe: excess sodium.	Severe: slope, excess sodium.	Slight.
209*:				
Keyner	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight.
Absted	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight.
Slickspots.				
210*:				
Keyner	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight.
Hiland	Slight	Slight	Moderate: slope.	Slight.
211*:				
Kezar	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Irson	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
211*:				
Clayburn	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
212 Lander	Severe: flooding.	Moderate: flooding, wetness.	Severe: flooding.	Moderate: wetness, flooding.
213*:				
Leavitt	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Coutis	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
214*, 215*:				
Lolite	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, erodes easily.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
216 Lonebear	Slight	Slight	Severe: slope.	Slight.
217*:				
Lupinto	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope, dusty.
Alcova	Slight	Slight	Severe: slope.	Slight.
218 Lupinto Family	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
219*:				
McFadden	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Edlin	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Blackhall	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.
220*:				
Middlewood	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.
Kather	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
221*:				
Milren	Slight	Slight	Moderate: slope.	Slight.
Bosler	Slight	Slight	Moderate: slope, small stones.	Slight.
Rock River	Slight	Slight	Severe: slope.	Slight.
222*:				
Mudray	Severe: depth to rock, excess sodium.	Severe: excess sodium, depth to rock.	Severe: slope, depth to rock, excess sodium.	Severe: erodes easily.
Bributte	Severe: slope, depth to rock, excess salt.	Severe: slope, excess salt, depth to rock.	Severe: slope, depth to rock, excess salt.	Moderate: slope.
Birdsley	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.
223*:				
Nathrop	Severe: slope.	Severe: slope.	Severe: large stones, slope.	Severe: slope.
Starley	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope.
224*:				
Neldore	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: too clayey, slope.
Moyerson	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
225 Nunnston	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
226*:				
Oceanet	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
226*:				
Persayo	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.
227*:				
Orella	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.
Cadoma	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Petrie	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Severe: erodes easily.
228*:				
Orella	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
229 Orpha	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: too sandy, slope.
230*:				
Orpha	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Tullock	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
231*:				
Orpha	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: too sandy, slope.
Vonalee	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Roughlock	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.
232*:				
Persayo	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
232*:				
Greybull	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Severe: erodes easily.
233*:				
Pesmore	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
Asholler	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
234 Petrie	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: small stones, percs slowly.	Severe: erodes easily.
235*:				
Petrie, wet	Severe: flooding, wetness, percs slowly.	Severe: percs slowly.	Severe: wetness, flooding, percs slowly.	Moderate: wetness, flooding.
Zigweid, wet	Severe: flooding, wetness.	Moderate: flooding, wetness, excess salt.	Severe: wetness, flooding.	Moderate: wetness, flooding, dusty.
236*:				
Petrie	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Severe: erodes easily.
Arvada	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight.
237*:				
Peyton	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
Holderness	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.
238: Pits and dumps.				
239*:				
Pokeman	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones.	Moderate: dusty.
Threetop	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
240*:				
Poposhia	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.
Blazon	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Moderate: dusty.
241*:				
Rawlins	Slight	Slight	Severe: slope.	Slight.
McFadden	Slight	Slight	Severe: slope.	Slight.
Blackhall	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.
242*:				
Rawlins	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Rock River	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
243*:				
Redsun	Severe: slope, large stones, small stones.	Severe: slope, large stones, small stones.	Severe: large stones, slope, small stones.	Moderate: large stones, slope, dusty.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
244*:				
Redsun	Severe: small stones.	Severe: small stones.	Severe: slope, small stones.	Moderate: large stones, dusty.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope.
Redbow	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Severe: erodes easily.
245*:				
Rekop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope, dusty.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
246*:				
Relsob	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
246*:				
Peyton	Slight	Slight	Moderate: slope, small stones.	Slight.
247*:				
Rencot	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.
Blazon	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.
248*:				
Rencot	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: dusty.
Rock outcrop	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight.
249*:				
Rencot	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope, dusty.
Duffson	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Moderate: dusty.
250*:				
Rencot	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Slight.
Thermopolis	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
251 Rivra	Severe: flooding.	Slight	Moderate: slope, small stones.	Slight.
252*:				
Rivra	Severe: flooding.	Slight	Moderate: slope, small stones.	Slight.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
252*:				
Urban land.				
253 Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
254*:				
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
Birdsley	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, erodes easily.
255*:				
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
Cathedral	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones.	Severe: slope.
256*:				
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
Ustic Torriorthents	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
Rubble land	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.
257 Rock River	Slight	Slight	Moderate: slope.	Slight.
258*:				
Rock River	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Hawkstone	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
259*:				
Rock River	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Pinelli	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
Blazon	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope, dusty.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
260*:				
Rock River	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Rawlins	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Moderate: slope.
Brownsto	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight.
261*:				
Rock River	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Ryan Park	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
McFadden	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
262*:				
Rock River	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Worfman	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight.
263*:				
Rock River	Slight	Slight	Moderate: slope.	Slight.
Ryan Park	Slight	Slight	Severe: slope.	Slight.
Hawkstone	Slight	Slight	Severe: slope.	Slight.
264 Roughlock	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.
265*:				
Roughlock	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.
Redbow	Moderate: dusty.	Moderate: dusty.	Moderate: slope, depth to rock, dusty.	Severe: erodes easily.
Redspear	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
266*:				
Roughlock	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Severe: erodes easily.
Buffcreek	Moderate: small stones, dusty.	Moderate: small stones, dusty.	Severe: small stones.	Moderate: dusty.
267*:				
Rubble land	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: large stones, slope, small stones.
Ustic Torriorthents	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones.
268 Ryan Park	Slight	Slight	Severe: slope.	Slight.
269*:				
Ryan Park	Slight	Slight	Severe: slope.	Slight.
Elk Mountain	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
270*:				
Saddle	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Griffy	Slight	Slight	Moderate: slope, small stones.	Slight.
271: Salt flats.				
272 Samday	Severe: slope, large stones, depth to rock.	Severe: slope, large stones, depth to rock.	Severe: large stones, slope, small stones.	Severe: slope.
273*:				
Savageton	Moderate: small stones, percs slowly.	Moderate: too clayey, small stones.	Severe: small stones.	Moderate: too clayey.
Samday	Severe: depth to rock.	Severe: depth to rock.	Severe: large stones, slope.	Moderate: large stones.
274*:				
Shingle	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope, dusty.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
274*:				
Samday	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.
275*:				
Shingle	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
Taluce	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
276*:				
Shingle	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Moderate: dusty.
Theedle	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
277 Silhouette	Slight	Slight	Moderate: slope.	Slight.
278*:				
Silhouette	Slight	Slight	Moderate: slope.	Slight.
Petrie	Moderate: percs slowly.	Moderate: percs slowly.	Moderate: slope, small stones.	Severe: erodes easily.
279*:				
Starley	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, small stones, depth to rock.	Slight.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
280*:				
Stunner	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Pinelli	Slight	Slight	Severe: slope.	Slight.
281*:				
Sunup	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: small stones.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
281*:				
Kishona	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope, dusty.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
282*:				
Terro	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Vonalee	Slight	Slight	Moderate: slope.	Slight.
283*:				
Theedle	Severe: slope.	Severe: slope.	Severe: slope.	Severe: erodes easily.
Shingle	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope, dusty.
Kishona	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
284*:				
Threetop	Slight	Slight	Severe: slope.	Slight.
Sunup	Severe: small stones, depth to rock.	Severe: small stones, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: small stones.
Frontier	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight.
285 Tisworth	Severe: flooding, excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight.
286*:				
Travson	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
Rock outcrop	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
287*:				
Typic Fluvaquents	Severe: flooding, wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
287*:				
Aquic Ustifluvents	Severe: flooding, wetness, excess salt.	Severe: excess salt.	Severe: wetness, excess salt.	Moderate: wetness.
288 Typic Haplaquolls	Severe: flooding.	Moderate: wetness, percs slowly.	Moderate: slope, wetness.	Moderate: wetness.
289: Typic Torrifluvents.				
290*:				
Uffens, thick surface	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
Uffens	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
291*:				
Uffens	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Moderate: dusty.
Typic Torrifluvents.				
292 Ulm	Slight	Slight	Moderate: slope.	Slight.
293*:				
Ulm	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
Absted	Severe: excess sodium.	Severe: excess sodium.	Severe: excess sodium.	Slight.
294 Ulrant	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
295*: Urban land.				
Clarkelen	Severe: flooding.	Slight	Moderate: slope.	Slight.
296*: Urban land.				
Docpar	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
297*: Urban land.				
Savageton	Moderate: slope, percs slowly.	Moderate: slope, too clayey.	Severe: slope.	Moderate: too clayey.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
297*:				
Samday	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: erodes easily.
298*:				
Urban land.				
Silhouette	Slight	Slight	Moderate: slope.	Slight.
299*:				
Urban land.				
Theedle	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Slight.
Shingle	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Moderate: slope, dusty.
300 Vonalee	Slight	Slight	Severe: slope.	Slight.
301*:				
Vonalee	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Hiland	Slight	Slight	Moderate: slope.	Slight.
302*:				
Vonalee	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Slickspots.				
303 Whiteriver	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
304*:				
Woosley	Moderate: slope.	Moderate: slope.	Severe: slope.	Severe: erodes easily.
Starley	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Moderate: slope.
305*:				
Worf	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight.
Bowbac	Slight	Slight	Severe: slope.	Slight.

See footnote at end of table.

TABLE 10.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
306*:				
Worf	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Moderate: dusty.
Briggsdale	Moderate: dusty.	Moderate: dusty.	Moderate: slope, small stones, depth to rock.	Moderate: dusty.
307*:				
Worf Variant	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Slight.
Cushman Variant	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Peyton	Slight	Slight	Severe: slope.	Slight.
308*:				
Worfstone	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope.
McFadden	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
Lupinto	Moderate: slope, small stones.	Moderate: slope, small stones.	Severe: slope, small stones.	Slight.
309*:				
Zeomont	Moderate: slope, too sandy.	Moderate: slope, too sandy.	Severe: slope.	Moderate: too sandy.
Ryan Park	Slight	Slight	Severe: slope.	Slight.
310 Zigweid	Moderate: dusty.	Moderate: dusty.	Moderate: slope, dusty.	Moderate: dusty.
311*:				
Zigweid	Moderate: dusty.	Moderate: dusty.	Severe: slope.	Moderate: dusty.
Theedle	Moderate: slope, dusty.	Moderate: slope, dusty.	Severe: slope.	Slight.
312*:				
Zigweid	Slight	Slight	Moderate: slope.	Slight.
Urban land.				

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 11.--BUILDING SITE DEVELOPMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
101--------------- Absher	Moderate: too clayey.	Severe: flooding, shrink-swell.	Severe: flooding.	Severe: flooding, shrink-swell.	Severe: shrink-swell, low strength.	Severe: excess sodium.
102*:						
Adel-------------	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
Pagosa-----------	Moderate: depth to rock, too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: large stones.
103*:						
Alcova-----------	Slight---------	Moderate: shrink-swell.	Slight---------	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Moderate: droughty.
Rock River-------	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
104*:						
Alcova-----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Stunner----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
105*:						
Alflack----------	Severe: cutbanks cave.	Moderate: slope, large stones.	Moderate: depth to rock, slope, large stones.	Severe: slope.	Moderate: slope, large stones.	Severe: droughty.
Foxton-----------	Severe: depth to rock.	Severe: shrink-swell.	Severe: depth to rock, shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: depth to rock.
106*:						
Alflack----------	Severe: cutbanks cave.	Moderate: slope, large stones.	Moderate: depth to rock, slope, large stones.	Severe: slope.	Moderate: slope, large stones.	Severe: droughty.
Irson------------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: small stones, droughty.
Foxton Variant---	Moderate: depth to rock.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength, frost action.	Slight.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
107 Almy	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
108 Amodac	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
109*:						
Amodac	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
Keyner	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Severe: excess sodium.
110 Aquic Ustifluvents	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, frost action.	Severe: excess salt.
111*:						
Aquic Ustifluvents	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: frost action.	Severe: excess salt.
Orpha	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty, too sandy.
112*:						
Arvada	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: excess sodium.
Absted	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: excess sodium.
Slickspots.						
113*:						
Arvada	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: excess sodium.
Slickspots.						
114*:						
Bachus	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, shrink-swell, slope.	Moderate: slope, depth to rock.
Nathrop	Severe: depth to rock.	Moderate: slope, depth to rock, large stones.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, frost action.	Moderate: large stones, slope.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
115*:						
Bachus	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, shrink-swell, slope.	Moderate: slope, depth to rock.
Clayburn	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
116*:						
Bachus	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, shrink-swell, slope.	Moderate: slope, depth to rock.
Pagosa	Moderate: depth to rock, too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: large stones, slope.
117 Badland	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
118*:						
Badwater	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: droughty, slope.
Rubble land	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: small stones, large stones, droughty.
119*:						
Barnum	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: excess salt, flooding.
Redbank	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.
120 Bateson	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Moderate: droughty.
121 Bessemer	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Moderate: droughty.
122 Bessemer	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Moderate: small stones, droughty.
123*:						
Bessemer	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Moderate: small stones, droughty.
Urban land.						

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
124---------------- Blackdraw	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: droughty.
125*:						
Blackdraw---------	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: droughty, slope.
Lolite-----------	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	Severe: depth to rock.
Gullied land.						
126*:						
Blazon-----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Worfman----------	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	Severe: depth to rock.
127*:						
Blazon-----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Cragosen---------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Worfman----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
128*:						
Boettcher--------	Severe: slope.	Severe: shrink-swell, slope.	Severe: slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope.
Brownsto---------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
129*:						
Boettcher--------	Moderate: depth to rock, too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: depth to rock.
Pinelli----------	Moderate: too clayey.	Severe: shrink-swell.	Moderate: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
Worfman----------	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	Severe: depth to rock.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
130*:						
Bosler-----------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
Alcova-----------	Slight---------	Moderate: shrink-swell.	Slight---------	Moderate: shrink-swell, slope.	Moderate: shrink-swell.	Moderate: droughty.
131*:						
Bosler-----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Hiland-----------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
132*:						
Bowbac-----------	Moderate: depth to rock.	Slight---------	Moderate: depth to rock.	Moderate: slope.	Slight---------	Moderate: depth to rock.
Hiland-----------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
133*:						
Bowbac-----------	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Moderate: slope, depth to rock.
Hiland-----------	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
Worf-------------	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock.	Severe: depth to rock.
134*:						
Bowbac-----------	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Moderate: slope, depth to rock.
Taluce-----------	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	Severe: depth to rock.
Terro------------	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Moderate: slope, depth to rock.
135--------------- Bridger	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope.
136*:						
Brokenhorn-------	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
136*:						
Hyshot	Moderate: depth to rock, too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope, depth to rock.
137*:						
Brownsto	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Lupinto	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, droughty, slope.
138*:						
Buffcreek	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: large stones.	Moderate: small stones, large stones, droughty.
Redarrow	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
139*:						
Cabin	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Herbman	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope, depth to rock.
140*:						
Cadoma	Moderate: depth to rock, too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: depth to rock.
Renohill	Moderate: depth to rock, too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: depth to rock.
Samday	Severe: depth to rock.	Severe: shrink-swell.	Severe: depth to rock, shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: depth to rock.
141 Cambria	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Severe: low strength.	Slight.
142*:						
Cambria	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
Zigweid	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
143*:						
Cambria----------	Slight---------	Moderate: shrink-swell.	Slight---------	Moderate: shrink-swell.	Severe: low strength.	Slight.
Zigweid----------	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
144*:						
Castner----------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Chincap----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop-----	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
145*:						
Castner----------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Rock outcrop-----	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
146--------------- Cavegulch	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
147*:						
Cavegulch--------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
Brokenhorn-------	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
148--------------- Chalkcreek	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
149*:						
Chipendale-------	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: droughty.
Chipenhill-------	Severe: depth to rock.	Severe: shrink-swell.	Severe: depth to rock, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Severe: depth to rock.
150*:						
Chipendale-------	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Moderate: droughty.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
150*:						
Razsun-----------	Moderate: depth to rock, too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope, depth to rock.
151--------------- Chipenhill	Severe: depth to rock, slope.	Severe: shrink-swell, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, depth to rock.
152*:						
Chipenhill-------	Severe: depth to rock, slope.	Severe: shrink-swell, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, depth to rock.
Rock outcrop-----	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, thin layer.
153*:						
Chittum----------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Nielsen----------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Rock outcrop-----	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.
154*:						
Chittum----------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Sneffels---------	Severe: depth to rock.	Severe: shrink-swell.	Severe: depth to rock, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope, depth to rock.
155--------------- Clarkelen	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: droughty.
156*:						
Clayburn---------	Slight---------	Moderate: shrink-swell.	Slight---------	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
Moslander--------	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding, frost action.	Severe: wetness, flooding.
157*:						
Coalmont---------	Moderate: depth to rock, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope, depth to rock.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
157*:						
Milren	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength, frost action.	Slight.
Cragosen	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
158 Connerton	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Slight.
159 Copeman	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
160 Crago	Moderate: large stones, slope.	Moderate: slope, large stones.	Moderate: slope, large stones.	Severe: slope.	Moderate: slope, large stones.	Moderate: small stones, large stones.
161*:						
Crago	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope.
Pensore	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: large stones, droughty, slope.
162 Cragosen	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
163*:						
Cragosen	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: small stones, slope, depth to rock.
Chalkcreek	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
164*:						
Cragosen Variant	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: small stones, droughty, depth to rock.
Brownsto Variant	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope.
165 Curecanti	Moderate: large stones.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: shrink-swell, flooding.	Moderate: small stones, large stones, droughty.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
166 Curecanti Variant	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: large stones, slope.
167*:						
Cushman	Moderate: depth to rock, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope, depth to rock.
Forkwood	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
168*:						
Cushool	Moderate: depth to rock.	Slight	Moderate: depth to rock.	Moderate: slope.	Slight	Moderate: depth to rock.
Worfstone	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: droughty, depth to rock.
169*:						
Decross	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope, frost action.	Moderate: slope.
Woosley	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, shrink-swell, slope.	Moderate: slope, depth to rock.
170*:						
Delphill	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope, depth to rock.
Blazon	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
171*:						
Delplain	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, droughty, slope.
Rock outcrop	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
172*:						
Diamondville	Moderate: depth to rock.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Moderate: depth to rock.
Worfman	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	Severe: depth to rock.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
173--------------- Docpar	Severe: cutbanks cave.	Slight---------	Slight---------	Slight---------	Slight---------	Slight.
174--------------- Draknab	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: droughty.
175: Dune land.						
176*: Edlin------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock River-------	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Bosler-----------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
177*: Edlin------------	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
Ryan Park--------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
178*: Effington--------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Severe: excess sodium.
Uffens-----------	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Severe: excess sodium.
179*: Enos-------------	Severe: cutbanks cave.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope, depth to rock.
Wallson----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
180*: Farlow-----------	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: small stones, large stones, droughty.
Starley----------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: large stones, slope, depth to rock.
Rock outcrop-----	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
181*: Farlow-----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
181*:						
Starley	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: large stones, slope, depth to rock.
182*:						
Fiveoh	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Thermopolis	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
183 Forelle	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
184*:						
Forelle	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
Diamondville	Moderate: depth to rock, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope, depth to rock.
185*:						
Forelle	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
Lupinto	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
186*:						
Forkwood	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
Keyner	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Severe: excess sodium.
187*:						
Forkwood	Slight	Slight	Slight	Slight	Moderate: low strength.	Slight.
Ulm	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
188*:						
Forkwood	Slight	Slight	Slight	Moderate: slope.	Moderate: low strength.	Slight.
Zigweid	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
189*:						
Gateridge--------	Severe: depth to rock, slope.	Severe: shrink-swell, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, depth to rock.
Taluce Variant---	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
190--------------- Griffy	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
191*:						
Griffy-----------	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Slight.
Emblem-----------	Severe: cutbanks cave.	Moderate: shrink-swell.	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: droughty.
192*:						
Grimstone--------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Grimstone Variant	Severe: depth to rock, large stones, slope.	Severe: slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: droughty, slope.
193--------------- Haverdad	Slight---------	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength.	Slight.
194*:						
Haverdad---------	Slight---------	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength.	Slight.
Clarkelen--------	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Slight.
195*:						
Haverdad---------	Slight---------	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: low strength.	Slight.
Clarkelen--------	Slight---------	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Slight.
196--------------- Havermom	Moderate: wetness.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Slight.
197--------------- Hawkstone	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
198*:						
Hazton-----------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Rock outcrop-----	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
199 Hiland	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
200 Hiland	Severe: cutbanks cave.	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: droughty.
201 Hiland	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Slight.
202*:						
Inchau	Moderate: depth to rock, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: slope, depth to rock.
Clayburn	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope.	Severe: slope.	Moderate: shrink-swell, low strength, slope.	Moderate: slope.
Chittum	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.
203*:						
Inchau	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Farlow	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
204 Irson	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, droughty, slope.
205*:						
Irson	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, droughty, slope.
Kezar	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, shrink-swell, slope.	Moderate: small stones, droughty, slope.
Rock outcrop	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
206*:						
Irson	Severe: depth to rock, large stones, slope.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope, depth to rock, large stones.	Severe: depth to rock, slope, large stones.	Severe: small stones, large stones, droughty.
Sebud	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
207*:						
Keeline	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Taluce	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	Severe: depth to rock.
Rock outcrop	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, thin layer.
208 Keyner	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Severe: excess sodium.
209*:						
Keyner	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Severe: excess sodium.
Absted	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: excess sodium.
Slickspots.						
210*:						
Keyner	Slight	Moderate: shrink-swell.	Slight	Moderate: shrink-swell.	Moderate: shrink-swell, low strength.	Severe: excess sodium.
Hiland	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Slight.
211*:						
Kezar	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Irson	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, droughty, slope.
Clayburn	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope.	Severe: slope.	Moderate: shrink-swell, slope, frost action.	Moderate: slope.
212 Lander	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: flooding, frost action.	Severe: flooding.
213*:						
Leavitt	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
213*:						
Coutis	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
214*, 215*:						
Lolite	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock, too clayey.
Rock outcrop	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, thin layer.
216 Lonebear	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
217*:						
Lupinto	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Alcova	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
218 Lupinto Family	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: small stones, droughty, slope.
219*:						
McFadden	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Edlin	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Blackhall	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
220*:						
Middlewood	Severe: depth to rock, slope.	Severe: shrink-swell, slope, depth to rock.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope, depth to rock.	Severe: depth to rock, shrink-swell, low strength.	Severe: slope, depth to rock.
Kather	Moderate: depth to rock, too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope, depth to rock.
221*:						
Milren	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
Bosler	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
221*:						
Rock River	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
222*:						
Mudray	Severe: depth to rock.	Severe: shrink-swell.	Severe: depth to rock, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Severe: excess sodium, depth to rock.
Bributte	Severe: depth to rock, slope.	Severe: shrink-swell, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: excess salt, slope, depth to rock.
Birdsley	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
223*:						
Nathrop	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Starley	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
224*:						
Neldore	Severe: depth to rock, slope.	Severe: shrink-swell, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, depth to rock, too clayey.
Moyerson	Severe: depth to rock, slope.	Severe: shrink-swell, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, depth to rock.
Rock outcrop	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, thin layer.
225 Nunnston	Moderate: too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope.
226*:						
Oceanet	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Persayo	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
227*:						
Orella	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
227*:						
Cadoma-----------	Moderate: depth to rock, too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Moderate: slope, depth to rock.
Petrie-----------	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
228*:						
Orella-----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Rock outcrop-----	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, thin layer.
229--------------- Orpha	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
230*:						
Orpha------------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Tullock----------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Rock outcrop-----	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, thin layer.
231*:						
Orpha------------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Vonalee----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Roughlock--------	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
232*:						
Persayo----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Greybull---------	Moderate: depth to rock, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope, depth to rock.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
233*:						
Pesmore----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope.
Asholler---------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Rock outcrop-----	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
234--------------- Petrie	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
235*:						
Petrie, wet------	Severe: wetness.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: flooding, wetness, shrink-swell.	Severe: shrink-swell, low strength, flooding.	Severe: flooding.
Zigweid, wet-----	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: low strength, flooding.	Severe: flooding.
236*:						
Petrie-----------	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
Arvada-----------	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: excess sodium.
237*:						
Peyton-----------	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
Holderness-------	Moderate: too clayey.	Severe: shrink-swell.	Moderate: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
238: Pits and dumps.						
239*:						
Pokeman----------	Moderate: depth to rock.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Moderate: depth to rock.
Threetop---------	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock.	Moderate: depth to rock.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
240*:						
Poposhia	Slight	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, frost action.	Slight.
Blazon	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, low strength, slope.	Severe: depth to rock.
241*:						
Rawlins	Slight	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
McFadden	Slight	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Blackhall	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
242*:						
Rawlins	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Rock River	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
243*:						
Redsun	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, large stones, droughty.
Rock outcrop	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
244*:						
Redsun	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: small stones, large stones, droughty.
Rock outcrop	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
Redbow	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, frost action.	Moderate: depth to rock.
245*:						
Rekop	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
245*:						
Rock outcrop-----	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, thin layer.
246*:						
Relsob-----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Peyton-----------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Moderate: frost action.	Slight.
247*:						
Rencot-----------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope, depth to rock.
Blazon-----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
248*:						
Rencot-----------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Rock outcrop-----	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.
249*:						
Rencot-----------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Duffson----------	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope, frost action.	Moderate: slope, depth to rock.
250*:						
Rencot-----------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: small stones, depth to rock.
Thermopolis------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Rock outcrop-----	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
251--------------- Rivra	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Severe: droughty.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
252*:						
Rivra	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Severe: droughty.
Urban land.						
253 Rock outcrop	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, thin layer.
254*:						
Rock outcrop	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, thin layer.
Birdsley	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
255*:						
Rock outcrop	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
Cathedral	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
256*:						
Rock outcrop	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
Ustic Torriorthents	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Rubble land	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: small stones, large stones, droughty.
257 Rock River	Slight	Slight	Slight	Slight	Slight	Slight.
258*:						
Rock River	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Hawkstone	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
259*:						
Rock River	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Pinelli	Moderate: too clayey.	Severe: shrink-swell.	Moderate: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
259*:						
Blazon	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
260*:						
Rock River	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Rawlins	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Brownsto	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, large stones, slope.
261*:						
Rock River	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Ryan Park	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
McFadden	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
262*:						
Rock River	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
Worfman	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	Severe: depth to rock.
263*:						
Rock River	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
Ryan Park	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
Hawkstone	Slight	Slight	Slight	Moderate: slope.	Slight	Slight.
264 Roughlock	Slight	Slight	Slight	Slight	Slight	Slight.
265*:						
Roughlock	Moderate: depth to rock.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Moderate: shrink-swell, low strength.	Slight.
Redbow	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock, frost action.	Moderate: depth to rock.
Redspear	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
266*:						
Roughlock--------	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Slight.
Buffcreek--------	Moderate: large stones.	Moderate: large stones.	Moderate: large stones.	Moderate: slope, large stones.	Moderate: large stones.	Moderate: small stones, large stones, droughty.
267*:						
Rubble land------	Severe: large stones, slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: small stones, large stones, droughty.
Ustic Torriorthents---	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: small stones, slope, depth to rock.
268--------------- Ryan Park	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
269*:						
Ryan Park--------	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
Elk Mountain-----	Severe: cutbanks cave.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Moderate: slope, depth to rock.
270*:						
Saddle-----------	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Moderate: slope, depth to rock.
Griffy-----------	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
271: Salt flats.						
272--------------- Samday	Severe: depth to rock, slope.	Severe: shrink-swell, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: large stones, slope, depth to rock.
273*:						
Savageton--------	Moderate: depth to rock, too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: too clayey.
Samday-----------	Severe: depth to rock.	Severe: shrink-swell.	Severe: depth to rock, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Severe: large stones, depth to rock.
274*:						
Shingle----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
274*:						
Samday	Severe: depth to rock, slope.	Severe: shrink-swell, slope.	Severe: depth to rock, slope, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength, slope.	Severe: slope, depth to rock, too clayey.
275*:						
Shingle	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Taluce	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Rock outcrop	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, thin layer.
276*:						
Shingle	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, shrink-swell, slope.	Severe: depth to rock.
Theedle	Moderate: depth to rock, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope, depth to rock.
277 Silhouette	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
278*:						
Silhouette	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
Petrie	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
279*:						
Starley	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.
Rock outcrop	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
280*:						
Stunner	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: low strength, slope.	Moderate: slope.
Pinelli	Moderate: too clayey.	Severe: shrink-swell.	Moderate: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
281*:						
Sunup------------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: small stones, slope, depth to rock.
Kishona----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Rock outcrop-----	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.
282*:						
Terro------------	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope.	Moderate: slope, depth to rock.
Vonalee----------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
283*:						
Theedle----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
Shingle----------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
Kishona----------	Moderate: slope.	Moderate: shrink-swell, slope.	Moderate: slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope.
284*:						
Threetop---------	Severe: depth to rock.	Moderate: depth to rock.	Severe: depth to rock.	Moderate: slope, depth to rock.	Moderate: depth to rock.	Moderate: depth to rock.
Sunup------------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: small stones, depth to rock.
Frontier---------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: slope, depth to rock.	Severe: depth to rock.	Severe: depth to rock.
285--------------- Tisworth	Slight---------	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Severe: excess sodium.
286*:						
Travson----------	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
Rock outcrop-----	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
287*: Typic Fluvaquents	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: wetness, flooding.	Severe: wetness.
Aquic Ustifluvents----	Severe: wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: frost action.	Severe: excess salt.
288--------------- Typic Haplaquolls	Severe: wetness.	Severe: flooding.	Severe: flooding, wetness.	Severe: flooding.	Severe: frost action.	Moderate: wetness.
289: Typic Torrifluvents.						
290*: Uffens, thick surface---------	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Severe: excess sodium.
Uffens----------	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Severe: excess sodium.
291*: Uffens----------	Slight---------	Slight---------	Slight---------	Slight---------	Slight---------	Severe: excess sodium.
Typic Torrifluvents.						
292--------------- Ulm	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
293*: Ulm--------------	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
Absted----------	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Severe: excess sodium.
294--------------- Ulrant	Moderate: depth to rock, slope.	Moderate: slope.	Moderate: depth to rock, slope.	Severe: slope.	Moderate: slope, frost action.	Moderate: slope.
295*: Urban land.						
Clarkelen--------	Severe: cutbanks cave.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Moderate: flooding.	Moderate: droughty.
296*: Urban land.						

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
296*:						
Docpar	Severe: cutbanks cave.	Slight	Slight	Slight	Slight	Slight.
297*:						
Urban land.						
Savageton	Moderate: depth to rock, too clayey, slope.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Severe: too clayey.
Samday	Severe: depth to rock.	Severe: shrink-swell.	Severe: depth to rock, shrink-swell.	Severe: shrink-swell, slope.	Severe: shrink-swell, low strength.	Severe: depth to rock, too clayey.
298*:						
Urban land.						
Silhouette	Moderate: too clayey.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell.	Severe: shrink-swell, low strength.	Slight.
299*:						
Urban land.						
Theedle	Moderate: depth to rock, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope, depth to rock.
Shingle	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.
300 Vonalee	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Moderate: droughty.
301*:						
Vonalee	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Hiland	Severe: cutbanks cave.	Slight	Slight	Moderate: slope.	Slight	Slight.
302*:						
Vonalee	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Slickspots.						
303 Whiteriver	Moderate: too clayey.	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell.	Severe: low strength.	Slight.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
304*:						
Woosley	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, shrink-swell, slope.	Moderate: slope, depth to rock.
Starley	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.
305*:						
Worf	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, slope.	Severe: depth to rock.
Bowbac	Moderate: depth to rock.	Slight	Moderate: depth to rock.	Moderate: slope.	Slight	Moderate: depth to rock.
306*:						
Worf	Severe: depth to rock.	Moderate: slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, low strength, slope.	Severe: depth to rock.
Briggsdale	Moderate: depth to rock.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Moderate: depth to rock.
307*:						
Worf Variant	Severe: depth to rock.	Moderate: shrink-swell, slope, depth to rock.	Severe: depth to rock.	Severe: slope.	Moderate: depth to rock, shrink-swell, slope.	Severe: depth to rock.
Cushman Variant	Moderate: depth to rock, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Moderate: shrink-swell, slope, frost action.	Moderate: slope, depth to rock.
Peyton	Slight	Slight	Slight	Moderate: slope.	Moderate: frost action.	Slight.
308*:						
Worfstone	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: slope, depth to rock.	Severe: depth to rock, slope.	Severe: droughty, slope, depth to rock.
McFadden	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Lupinto	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: small stones, droughty, slope.

See footnote at end of table.

TABLE 11.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
309*:						
Zeomont----------	Severe: cutbanks cave.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: droughty, slope.
Ryan Park--------	Severe: cutbanks cave.	Slight---------	Slight---------	Moderate: slope.	Slight---------	Moderate: droughty.
310--------------- Zigweid	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
311*:						
Zigweid----------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
Theedle----------	Moderate: depth to rock, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, slope, shrink-swell.	Severe: slope.	Severe: low strength.	Moderate: slope, depth to rock.
312*:						
Zigweid----------	Slight---------	Moderate: shrink-swell.	Moderate: shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Slight.
Urban land.						

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 12.--SANITARY FACILITIES

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "good," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
101------------------ Absher	Severe: percs slowly.	Slight-----------	Severe: excess salt.	Moderate: flooding.	Good.
102*:					
Adel---------------	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, small stones, slope.
Pagosa-------------	Severe: percs slowly.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock.	Poor: too clayey, hard to pack, small stones.
103*:					
Alcova-------------	Slight-----------	Severe: seepage.	Slight-----------	Slight-----------	Poor: small stones.
Rock River---------	Slight-----------	Severe: seepage.	Slight-----------	Slight-----------	Good.
104*:					
Alcova-------------	Severe: poor filter.	Severe: seepage, slope.	Severe: too sandy.	Moderate: slope.	Poor: seepage, too sandy, small stones.
Stunner------------	Moderate: percs slowly, slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: slope, thin layer.
105*:					
Alflack------------	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock, large stones.
Foxton-------------	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
106*:					
Alflack------------	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage.	Severe: depth to rock, seepage.	Poor: depth to rock, large stones.
Irson--------------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
106*:					
Foxton Variant	Moderate: depth to rock, percs slowly.	Moderate: seepage, depth to rock, slope.	Severe: depth to rock.	Moderate: depth to rock.	Fair: depth to rock, too clayey, small stones.
107 Almy	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
108 Amodac	Severe: percs slowly.	Severe: slope.	Slight	Slight	Good.
109*:					
Amodac	Severe: percs slowly.	Severe: slope.	Slight	Slight	Good.
Keyner	Severe: percs slowly.	Severe: slope.	Slight	Slight	Good.
110 Aquic Ustifluvents	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness, excess salt.	Severe: flooding, wetness.	Poor: wetness.
111*:					
Aquic Ustifluvents	Severe: wetness.	Severe: wetness.	Severe: wetness, excess salt.	Severe: wetness.	Poor: wetness.
Orpha	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Slight	Poor: too sandy.
112*:					
Arvada	Severe: percs slowly.	Slight	Slight	Slight	Good.
Absted	Severe: percs slowly.	Moderate: slope.	Severe: excess salt.	Slight	Good.
Slickspots.					
113*:					
Arvada	Severe: percs slowly.	Slight	Slight	Slight	Good.
Slickspots.					
114*:					
Bachus	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Nathrop	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
115*:					
Bachus	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Clayburn	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
116*:					
Bachus	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Pagosa	Severe: percs slowly.	Severe: slope.	Severe: depth to rock, too clayey.	Moderate: depth to rock, slope.	Poor: too clayey, hard to pack, small stones.
117 Badland	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
118*:					
Badwater	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Rubble land	Severe: poor filter, large stones.	Severe: seepage, slope.	Severe: depth to rock, seepage.	Severe: seepage.	Poor: seepage, small stones, slope.
119*:					
Barnum	Severe: flooding.	Severe: flooding.	Severe: flooding.	Severe: flooding.	Fair: too sandy.
Redbank	Severe: flooding.	Severe: seepage, flooding.	Severe: flooding.	Severe: flooding.	Fair: too sandy.
120 Bateson	Slight	Severe: seepage.	Slight	Slight	Poor: seepage, small stones.
121, 122 Bessemer	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: large stones.	Slight	Poor: large stones.
123*:					
Bessemer	Moderate: percs slowly.	Moderate: seepage, slope.	Moderate: large stones.	Slight	Poor: large stones.
Urban land.					
124 Blackdraw	Severe: percs slowly.	Moderate: slope.	Severe: excess salt.	Slight	Poor: hard to pack.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
125*:					
Blackdraw----------	Severe: percs slowly.	Severe: slope.	Severe: excess salt.	Moderate: slope.	Poor: hard to pack.
Lolite-------------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock, excess salt.	Moderate: slope.	Poor: depth to rock.
Gullied land.					
126*:					
Blazon-------------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Worfman------------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
127*:					
Blazon-------------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Cragosen-----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Worfman------------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
128*:					
Boettcher----------	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, hard to pack, slope.
Brownsto-----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
129*:					
Boettcher----------	Severe: depth to rock, percs slowly.	Severe: depth to rock.	Severe: depth to rock.	Slight-----------	Poor: depth to rock, hard to pack.
Pinelli------------	Severe: percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.
Worfman------------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
130*:					
Bosler-------------	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Slight-----------	Poor: seepage, too sandy, small stones.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
130*:					
Alcova	Slight	Severe: seepage.	Slight	Slight	Poor: small stones.
131*:					
Bosler	Severe: poor filter.	Severe: seepage, slope.	Severe: too sandy.	Moderate: slope.	Poor: seepage, too sandy, small stones.
Hiland	Slight	Severe: seepage.	Slight	Slight	Good.
132*:					
Bowbac	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock.	Slight	Poor: depth to rock.
Hiland	Slight	Severe: seepage.	Slight	Slight	Good.
133*:					
Bowbac	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Hiland	Moderate: percs slowly.	Severe: seepage.	Slight	Slight	Good.
Worf	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight	Poor: depth to rock.
134*:					
Bowbac	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Taluce	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Terro	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
135 Bridger	Severe: percs slowly.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, slope.
136*:					
Brokenhorn	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Poor: hard to pack.
Hyshot	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
137*:					
Brownsto	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
Lupinto	Moderate: percs slowly, slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
138*:					
Buffcreek	Moderate: percs slowly, large stones.	Severe: slope.	Moderate: large stones.	Slight	Poor: small stones.
Redarrow	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
139*:					
Cabin	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: seepage, slope, too sandy.	Severe: seepage, slope.	Poor: seepage, too sandy, small stones.
Herbman	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
140*:					
Cadoma	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Slight	Poor: depth to rock, hard to pack.
Renohill	Severe: depth to rock, percs slowly.	Severe: depth to rock.	Severe: depth to rock.	Slight	Poor: depth to rock, hard to pack.
Samday	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Slight	Poor: depth to rock, hard to pack.
141 Cambria	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
142*, 143*:					
Cambria	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Zigweid	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
144*:					
Castner	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, slope.	Poor: depth to rock, seepage, small stones.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
144*:					
Chincap	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, seepage, slope.	Poor: depth to rock, slope.
Rock outcrop	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, slope.
145*:					
Castner	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, slope.	Poor: depth to rock, seepage, small stones.
Rock outcrop	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, slope.
146 Cavegulch	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
147*:					
Cavegulch	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
Brokenhorn	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Poor: hard to pack.
148 Chalkcreek	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
149*:					
Chipendale	Severe: percs slowly.	Severe: slope.	Slight	Slight	Poor: hard to pack.
Chipenhill	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock, hard to pack.
150*:					
Chipendale	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Poor: hard to pack.
Razsun	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
151 Chipenhill	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, hard to pack, slope.
152*:					
Chipenhill	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, hard to pack, slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
152*:					
Rock outcrop-------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
153*:					
Chittum------------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Nielsen------------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, small stones.
Rock outcrop-------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
154*:					
Chittum------------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Sneffels-----------	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: depth to rock, too clayey, hard to pack.
155----------------- Clarkelen	Moderate: flooding.	Severe: seepage.	Moderate: flooding, too sandy.	Moderate: flooding.	Fair: too sandy, thin layer.
156*:					
Clayburn-----------	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.
Moslander----------	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
157*:					
Coalmont-----------	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Milren-------------	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.
Cragosen-----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
158----------------- Connerton	Moderate: percs slowly.	Moderate: seepage.	Moderate: too clayey.	Slight-----------	Fair: too clayey.
159----------------- Copeman	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Fair: small stones.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
160----------------- Crago	Moderate: percs slowly, slope, large stones.	Severe: slope, large stones.	Severe: large stones.	Moderate: slope.	Poor: small stones.
161*:					
Crago--------------	Severe: slope.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
Pensore------------	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope.	Poor: depth to rock, slope.
162----------------- Cragosen	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
163*:					
Cragosen-----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Chalkcreek---------	Moderate: percs slowly.	Severe: slope.	Slight-----------	Slight-----------	Good.
164*:					
Cragosen Variant---	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight-----------	Poor: depth to rock.
Brownsto Variant---	Severe: depth to rock, poor filter, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, seepage, small stones.
165----------------- Curecanti	Moderate: flooding, percs slowly.	Severe: slope.	Moderate: flooding, too clayey.	Moderate: flooding.	Poor: small stones.
166----------------- Curecanti Variant	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, large stones, slope.
167*:					
Cushman------------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Forkwood-----------	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.
168*:					
Cushool------------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight-----------	Poor: depth to rock.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
168*:					
Worfstone----------	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock, seepage, small stones.
169*:					
Decross------------	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope, too clayey.	Moderate: slope.	Fair: too clayey, small stones, slope.
Woosley------------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
170*:					
Delphill-----------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Blazon-------------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
171*:					
Delplain-----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, small stones, slope.
Rock outcrop-------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, slope.
172*:					
Diamondville-------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight-----------	Poor: depth to rock.
Worfman------------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
173----------------- Docpar	Moderate: percs slowly.	Severe: seepage.	Severe: too sandy.	Slight-----------	Poor: too sandy.
174----------------- Draknab	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Moderate: flooding.	Poor: seepage, too sandy.
175: Dune land.					
176*:					
Edlin--------------	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: slope.
Rock River---------	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
176*:					
Bosler	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Slight	Poor: seepage, too sandy, small stones.
177*:					
Edlin	Slight	Severe: seepage, slope.	Slight	Slight	Good.
Ryan Park	Slight	Severe: seepage, slope.	Moderate: too sandy.	Slight	Fair: too sandy.
178*:					
Effington	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
Uffens	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
179*:					
Enos	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Wallson	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: slope, thin layer.
180*:					
Farlow	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope, large stones.	Severe: slope.	Poor: small stones, slope.
Starley	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, slope.
181*:					
Farlow	Severe: slope.	Severe: slope.	Severe: depth to rock, slope, large stones.	Severe: slope.	Poor: large stones, slope.
Starley	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
182*:					
Fiveoh	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Thermopolis	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
183 Forelle	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
184*:					
Forelle	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Diamondville	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
185*:					
Forelle	Moderate: percs slowly.	Severe: slope.	Slight	Slight	Good.
Lupinto	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
186*:					
Forkwood	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Keyner	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
187*:					
Forkwood	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Ulm	Severe: percs slowly.	Slight	Slight	Slight	Poor: hard to pack.
188*:					
Forkwood	Moderate: percs slowly.	Severe: slope.	Slight	Slight	Good.
Zigweid	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
189*:					
Gateridge	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: depth to rock, too clayey, hard to pack.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
189*:					
Taluce Variant	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
190 Griffy	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
191*:					
Griffy	Slight	Severe: seepage.	Slight	Slight	Good.
Emblem	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Slight	Poor: seepage, too sandy, small stones.
192*:					
Grimstone	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Grimstone Variant	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
193 Haverdad	Moderate: flooding, percs slowly.	Moderate: seepage, slope.	Moderate: flooding.	Moderate: flooding.	Good.
194*:					
Haverdad	Moderate: flooding, percs slowly.	Moderate: seepage.	Moderate: flooding.	Moderate: flooding.	Good.
Clarkelen	Moderate: flooding.	Severe: seepage.	Moderate: flooding, too sandy.	Moderate: flooding.	Fair: too sandy.
195*:					
Haverdad	Moderate: flooding, percs slowly.	Moderate: seepage.	Moderate: flooding.	Moderate: flooding.	Good.
Clarkelen	Moderate: flooding.	Severe: seepage.	Moderate: flooding.	Moderate: flooding.	Good.
196 Havermom	Severe: percs slowly.	Moderate: slope, wetness.	Severe: wetness.	Moderate: flooding, wetness.	Good.
197 Hawkstone	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
198*:					
Hazton	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Rock outcrop	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, slope.
199 Hiland	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
200 Hiland	Slight	Severe: seepage.	Moderate: too sandy.	Slight	Fair: too sandy, small stones.
201 Hiland	Slight	Severe: seepage.	Slight	Slight	Good.
202*:					
Inchau	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Clayburn	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Chittum	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
203*:					
Inchau	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Farlow	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: small stones, slope.
204 Irson	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
205*:					
Irson	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Kezar	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
205*:					
Rock outcrop	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, slope.
206*:					
Irson	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, large stones, slope.
Sebud	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: small stones, slope.
207*:					
Keeline	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Taluce	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Rock outcrop	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
208 Keyner	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
209*:					
Keyner	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
Absted	Severe: percs slowly.	Moderate: slope.	Severe: excess salt.	Slight	Good.
Slickspots.					
210*:					
Keyner	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
Hiland	Slight	Severe: seepage.	Slight	Slight	Good.
211*:					
Kezar	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Irson	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Clayburn	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
212 Lander	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Fair: too clayey, wetness.
213*:					
Leavitt	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Coutis	Moderate: slope.	Severe: seepage, slope.	Severe: seepage.	Severe: seepage.	Fair: slope.
214*, 215*:					
Lolite	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, excess salt.	Severe: slope.	Poor: depth to rock, slope.
Rock outcrop	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
216 Lonebear	Severe: percs slowly.	Severe: slope.	Slight	Slight	Poor: hard to pack.
217*:					
Lupinto	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: small stones, slope.
Alcova	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Slight	Poor: seepage, too sandy, small stones.
218 Lupinto Family	Severe: poor filter, slope.	Severe: seepage, slope, large stones.	Severe: slope, too sandy, large stones.	Severe: slope.	Poor: seepage, too sandy, small stones.
219*:					
McFadden	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: slope.
Edlin	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: slope.
Blackhall	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
220*:					
Middlewood	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, hard to pack, slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
220*:					
Kather-------------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock, hard to pack.
221*:					
Milren-------------	Moderate: percs slowly.	Severe: seepage.	Slight-----------	Slight-----------	Good.
Bosler-------------	Severe: poor filter.	Severe: seepage.	Severe: too sandy.	Slight-----------	Poor: seepage, too sandy, small stones.
Rock River---------	Moderate: percs slowly.	Moderate: seepage, slope.	Slight-----------	Slight-----------	Good.
222*:					
Mudray-------------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock, hard to pack.
Bributte-----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, hard to pack, slope.
Birdsley-----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
223*:					
Nathrop------------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Starley------------	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
224*:					
Neldore------------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, hard to pack, slope.
Moyerson-----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, hard to pack, slope.
Rock outcrop-------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
225---------------- Nunnston	Severe: percs slowly.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
226*:					
Oceanet	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Persayo	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
227*:					
Orella	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Cadoma	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock, hard to pack.
Petrie	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Poor: hard to pack.
228*:					
Orella	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Rock outcrop	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
229 Orpha	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: slope.	Poor: too sandy, slope.
230*:					
Orpha	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: slope.	Poor: too sandy, slope.
Tullock	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope, too sandy.	Severe: slope.	Poor: depth to rock, seepage, too sandy.
Rock outcrop	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
231*:					
Orpha	Severe: poor filter, slope.	Severe: seepage, slope.	Severe: slope, too sandy.	Severe: slope.	Poor: too sandy, slope.
Vonalee	Moderate: slope.	Severe: seepage, slope.	Moderate: slope, too sandy.	Moderate: slope.	Fair: too sandy, slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
231*:					
Roughlock	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
232*:					
Persayo	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Greybull	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
233*:					
Pesmore	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
Asholler	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, small stones, slope.
Rock outcrop	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, slope.
234 Petrie	Severe: percs slowly.	Slight	Slight	Slight	Poor: hard to pack.
235*:					
Petrie, wet	Severe: flooding, wetness, percs slowly.	Severe: flooding.	Severe: flooding, wetness, too clayey.	Severe: flooding, wetness.	Poor: too clayey, hard to pack, wetness.
Zigweid, wet	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
236*:					
Petrie	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Poor: hard to pack.
Arvada	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
237*:					
Peyton	Moderate: percs slowly, slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Holderness	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
238: Pits and dumps.					

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
239*:					
Pokeman	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Slight	Poor: depth to rock.
Threetop	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Slight	Poor: depth to rock.
240*:					
Poposhia	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Blazon	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
241*:					
Rawlins	Slight	Severe: seepage.	Slight	Slight	Fair: small stones.
McFadden	Slight	Severe: seepage.	Slight	Slight	Fair: small stones.
Blackhall	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
242*:					
Rawlins	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
Rock River	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
243*:					
Redsun	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope, large stones.	Severe: slope.	Poor: depth to rock, slope.
Rock outcrop	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, slope.
244*:					
Redsun	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Rock outcrop	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, slope.
Redbow	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight	Poor: depth to rock.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
245*:					
Rekop	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Rock outcrop	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
246*:					
Relsob	Severe: poor filter.	Severe: seepage, slope.	Severe: too sandy.	Moderate: slope.	Poor: seepage, too sandy.
Peyton	Slight	Severe: seepage.	Moderate: too sandy.	Slight	Fair: too sandy, small stones.
247*:					
Rencot	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, small stones, slope.
Blazon	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
248*:					
Rencot	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock, large stones.
Rock outcrop	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
249*:					
Rencot	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, large stones, slope.
Duffson	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
250*:					
Rencot	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock, small stones.
Thermopolis	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor depth to rock, slope.
Rock outcrop	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
251----------------- Rivra	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: wetness.	Poor: seepage, too sandy, small stones.
252*:					
Rivra---------------	Severe: wetness, poor filter.	Severe: seepage, wetness.	Severe: wetness, too sandy.	Severe: wetness.	Poor: seepage, too sandy, small stones.
Urban land.					
253----------------- Rock outcrop	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
254*:					
Rock outcrop-------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
Birdsley-----------	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
255*:					
Rock outcrop-------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, slope.
Cathedral----------	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, seepage, slope.	Severe: depth to rock, slope.	Poor: depth to rock, seepage, small stones.
256*:					
Rock outcrop-------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, slope.
Ustic Torriorthents	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, slope.
Rubble land--------	Severe: poor filter, large stones.	Severe: seepage, slope.	Severe: depth to rock, seepage.	Severe: seepage.	Poor: seepage, small stones, slope.
257----------------- Rock River	Slight-----------	Severe: seepage.	Slight-----------	Slight-----------	Good.
258*:					
Rock River---------	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
258*:					
Hawkstone	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
259*:					
Rock River	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Pinelli	Severe: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Blazon	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
260*:					
Rock River	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Rawlins	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: slope.
Brownsto	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
261*:					
Rock River	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Ryan Park	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
McFadden	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: slope.	Poor: slope.
262*:					
Rock River	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Worfman	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
263*:					
Rock River	Slight	Severe: seepage.	Slight	Slight	Good.
Ryan Park	Slight	Severe: seepage, slope.	Moderate: too sandy.	Slight	Poor: seepage.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
263*:					
Hawkstone----------	Slight----------	Severe: seepage.	Slight----------	Slight----------	Good.
264----------------- Roughlock	Moderate: percs slowly.	Moderate: seepage, slope.	Slight----------	Slight----------	Good.
265*:					
Roughlock----------	Moderate: depth to rock, percs slowly.	Moderate: seepage, depth to rock, slope.	Severe: depth to rock.	Slight----------	Fair: depth to rock, thin layer.
Redbow-------------	Severe: depth to rock.	Severe: depth to rock.	Severe: depth to rock.	Slight----------	Poor: depth to rock.
Redspear-----------	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
266*:					
Roughlock----------	Moderate: percs slowly.	Moderate: seepage, slope.	Slight----------	Slight----------	Good.
Buffcreek----------	Moderate: percs slowly, large stones.	Moderate: seepage, slope.	Moderate: large stones.	Slight----------	Poor: small stones.
267*:					
Rubble land--------	Severe: poor filter, large stones.	Severe: seepage, slope.	Severe: depth to rock, seepage.	Severe: seepage.	Poor: seepage, small stones, slope.
Ustic Torriorthents	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
268----------------- Ryan Park	Slight----------	Severe: seepage.	Moderate: too sandy.	Slight----------	Poor: seepage.
269*:					
Ryan Park----------	Slight----------	Severe: seepage.	Slight----------	Slight----------	Good.
Elk Mountain-------	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
270*:					
Saddle-------------	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
270*:					
Griffy	Slight	Severe: seepage.	Slight	Slight	Good.
271: Salt flats.					
272 Samday	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, hard to pack, slope.
273*:					
Savageton	Severe: depth to rock, percs slowly.	Severe: depth to rock.	Severe: depth to rock.	Slight	Poor: depth to rock, hard to pack.
Samday	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock, hard to pack.
274*:					
Shingle	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Samday	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, hard to pack, slope.
275*:					
Shingle	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Taluce	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Rock outcrop	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, slope.
276*:					
Shingle	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Theedle	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
277 Silhouette	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Poor: hard to pack.
278*:					
Silhouette	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Poor: hard to pack.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
278*:					
Petrie	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Poor: hard to pack.
279*:					
Starley	Severe: depth to rock.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, large stones.	Severe: depth to rock.	Poor: depth to rock, small stones.
Rock outcrop	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, slope.
280*:					
Stunner	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.
Pinelli	Severe: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
281*:					
Sunup	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, small stones, slope.
Kishona	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Poor: slope.
Rock outcrop	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, slope.
282*:					
Terro	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Vonalee	Slight	Severe: seepage.	Moderate: too sandy.	Slight	Fair: too sandy.
283*:					
Theedle	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Shingle	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Kishona	Moderate: percs slowly, slope.	Severe: slope.	Moderate: slope.	Moderate: slope.	Fair: slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
284*:					
Threetop	Severe: depth to rock.	Severe: seepage, depth to rock, slope.	Severe: depth to rock.	Slight	Poor: depth to rock, small stones.
Sunup	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock, small stones.
Frontier	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
285 Tisworth	Severe: percs slowly.	Moderate: slope.	Moderate: flooding.	Moderate: flooding.	Good.
286*:					
Travson	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
Rock outcrop	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock, slope.
287*:					
Typic Fluvaquents	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Severe: flooding, wetness.	Poor: wetness.
Aquic Ustifluvents	Severe: wetness.	Severe: wetness.	Severe: wetness, excess salt.	Severe: wetness.	Poor: wetness.
288 Typic Haplaquolls	Severe: wetness.	Severe: seepage, wetness.	Severe: wetness.	Severe: seepage, wetness.	Fair: wetness.
289: Typic Torrifluvents.					
290*:					
Uffens, thick surface	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
Uffens	Severe: percs slowly.	Slight	Slight	Slight	Good.
291*:					
Uffens	Severe: percs slowly.	Slight	Slight	Slight	Good.
Typic Torrifluvents.					
292 Ulm	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Poor: hard to pack.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
293*:					
Ulm	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Poor: hard to pack.
Absted	Severe: percs slowly.	Moderate: slope.	Severe: excess salt.	Slight	Good.
294 Ulrant	Moderate: depth to rock, percs slowly, slope.	Severe: slope.	Severe: depth to rock.	Moderate: depth to rock, slope.	Poor: small stones.
295*: Urban land.					
Clarkelen	Moderate: flooding.	Severe: seepage.	Moderate: flooding, too sandy.	Moderate: flooding.	Fair: too sandy, thin layer.
296*: Urban land.					
Docpar	Moderate: percs slowly.	Severe: seepage.	Severe: too sandy.	Slight	Poor: too sandy.
297*: Urban land.					
Savageton	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock, hard to pack.
Samday	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock, hard to pack.
298*: Urban land.					
Silhouette	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Poor: hard to pack.
299*: Urban land.					
Theedle	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Shingle	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, slope.
300 Vonalee	Slight	Severe: seepage.	Moderate: too sandy.	Slight	Fair: too sandy.
301*:					
Vonalee	Moderate: slope.	Severe: seepage, slope.	Moderate: slope, too sandy.	Moderate: slope.	Fair: too sandy, slope.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
301*:					
Hiland	Slight	Severe: seepage.	Slight	Slight	Good.
302*:					
Vonalee	Moderate: slope.	Severe: seepage, slope.	Moderate: slope, too sandy.	Moderate: slope.	Fair: too sandy, slope.
Slickspots.					
303 Whiteriver	Severe: percs slowly.	Moderate: slope.	Slight	Slight	Good.
304*:					
Woosley	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Severe: depth to rock.	Poor: depth to rock.
Starley	Severe: depth to rock, slope.	Severe: depth to rock, slope, large stones.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: depth to rock, small stones, slope.
305*:					
Worf	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Bowbac	Severe: depth to rock.	Severe: seepage, depth to rock.	Severe: depth to rock.	Slight	Poor: depth to rock.
306*:					
Worf	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Briggsdale	Severe: depth to rock, percs slowly.	Severe: depth to rock.	Severe: depth to rock.	Slight	Poor: depth to rock.
307*:					
Worf Variant	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Cushman Variant	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
Peyton	Moderate: percs slowly.	Severe: seepage, slope.	Slight	Slight	Good.
308*:					
Worfstone	Severe: depth to rock, slope.	Severe: seepage, depth to rock, slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: depth to rock, seepage, small stones.

See footnote at end of table.

TABLE 12.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
308*:					
McFadden	Moderate: slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Fair: small stones, slope.
Lupinto	Moderate: percs slowly, slope.	Severe: seepage, slope.	Moderate: slope.	Moderate: slope.	Poor: small stones.
309*:					
Zeomont	Severe: poor filter.	Severe: seepage, slope.	Severe: too sandy.	Moderate: slope.	Poor: seepage, too sandy.
Ryan Park	Slight	Severe: seepage, slope.	Moderate: too sandy.	Slight	Poor: seepage.
310 Zigweid	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
311*:					
Zigweid	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Theedle	Severe: depth to rock.	Severe: depth to rock, slope.	Severe: depth to rock.	Moderate: slope.	Poor: depth to rock.
312*:					
Zigweid	Moderate: percs slowly.	Moderate: seepage, slope.	Slight	Slight	Good.
Urban land.					

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 13.--CONSTRUCTION MATERIALS

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
101 Absher	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
102*:				
Adel	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim, slope.
Pagosa	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
103*:				
Alcova	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Rock River	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
104*:				
Alcova	Good	Probable	Probable	Poor: small stones, area reclaim.
Stunner	Good	Probable	Probable	Fair: small stones, area reclaim, slope.
105*:				
Alflack	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones.
Foxton	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, large stones.
106*:				
Alflack	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones.
Irson	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
106*:				
Foxton Variant	Fair: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim.
107 Almy	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
108 Amodac	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
109*:				
Amodac	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
Keyner	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.
110 Aquic Ustifluvents	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
111*:				
Aquic Ustifluvents	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
Orpha	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
112*:				
Arvada	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess sodium.
Absted	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt, excess sodium.
Slickspots.				
113*:				
Arvada	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess sodium.
Slickspots.				
114*:				
Bachus	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Nathrop	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
115*:				
Bachus	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Clayburn	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
116*:				
Bachus	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Pagosa	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones, area reclaim.
117 Badland	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
118*:				
Badwater	Fair: shrink-swell, low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Rubble land	Poor: large stones.	Improbable: small stones, large stones.	Improbable: large stones.	Poor: area reclaim, small stones, slope.
119*:				
Barnum	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, too clayey, small stones.
Redbank	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, small stones.
120 Bateson	Good	Probable	Probable	Poor: small stones, area reclaim.
121, 122 Bessemer	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
123*:				
Bessemer	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones.
Urban land.				
124 Blackdraw	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
125*:				
Blackdraw------------	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt.
Lolite---------------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey.
Gullied land.				
126*:				
Blazon---------------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Worfman--------------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
127*:				
Blazon---------------	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Cragosen-------------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Worfman--------------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
128*:				
Boettcher------------	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, slope.
Brownsto-------------	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
129*:				
Boettcher------------	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
Pinelli--------------	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Worfman--------------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
130*:				
Bosler	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
Alcova	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
131*:				
Bosler	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
Hiland	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
132*:				
Bowbac	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, small stones.
Hiland	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
133*:				
Bowbac	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, small stones.
Hiland	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Worf	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
134*:				
Bowbac	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, small stones.
Taluce	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
Terro	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, thin layer, slope.
135 Bridger	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
136*:				
Brokenhorn	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Hyshot	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
137*:				
Brownsto	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Lupinto	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
138*:				
Buffcreek	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Redarrow	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
139*:				
Cabin	Fair: slope.	Probable	Probable	Poor: too sandy, small stones, area reclaim.
Herbman	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
140*:				
Cadoma	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Renohill	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Samday	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey.
141 Cambria	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
142*:				
Cambria	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Zigweid	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
143*:				
Cambria	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Zigweid	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
144*:				
Castner	Poor: depth to rock, slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: depth to rock, small stones, slope.
Chincap	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.
145*:				
Castner	Poor: depth to rock.	Improbable: thin layer.	Improbable: thin layer.	Poor: depth to rock, small stones, slope.
Rock outcrop	Poor: depth to rock.	Improbable	Improbable	Poor: depth to rock, slope.
146 Cavegulch	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
147*:				
Cavegulch	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt.
Brokenhorn	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
148 Chalkcreek	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
149*:				
Chipendale	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
149*:				
Chipenhill	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, excess salt.
150*:				
Chipendale	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt.
Razsun	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
151 Chipenhill	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, excess salt.
152*:				
Chipenhill	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, excess salt.
Rock outcrop	Poor: depth to rock slope.	Improbable	Improbable	Poor: depth to rock, slope.
153*:				
Chittum	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Nielsen	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Rock outcrop	Poor: depth to rock.	Improbable	Improbable	Poor: depth to rock.
154*:				
Chittum	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Sneffels	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, small stones.
155 Clarkelen	Good	Probable	Probable	Poor: area reclaim.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
156*:				
Clayburn	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Moslander	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
157*:				
Coalmont	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Milren	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Cragosen	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
158 Connerton	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
159 Copeman	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
160 Crago	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
161*:				
Crago	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Pensore	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, large stones, slope.
162 Cragosen	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
163*:				
Cragosen	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Chalkcreek	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
164*:				
Cragosen Variant-----	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Brownsto Variant-----	Poor: depth to rock.	Improbable: thin layer.	Improbable: thin layer.	Poor: small stones, slope.
165------------------- Curecanti	Fair: shrink-swell, large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
166------------------- Curecanti Variant	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: large stones, slope.
167*:				
Cushman--------------	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, slope.
Forkwood-------------	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
168*:				
Cushool--------------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, small stones, thin layer.
Worfstone------------	Poor: depth to rock.	Improbable: thin layer.	Improbable: thin layer.	Poor: depth to rock, small stones.
169*:				
Decross--------------	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, area reclaim.
Woosley--------------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
170*:				
Delphill-------------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, small stones, thin layer.
Blazon---------------	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
171*:				
Delplain	Poor: depth to rock.	Improbable	Improbable	Poor: depth to rock, too clayey, small stones.
Rock outcrop	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
172*:				
Diamondville	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, small stones.
Worfman	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
173 Docpar	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
174 Draknab	Good	Probable	Improbable: too sandy.	Poor: too sandy.
175: Dune land.				
176*:				
Edlin	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Rock River	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim, slope.
Bosler	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
177*:				
Edlin	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Ryan Park	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
178*:				
Effington	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
Uffens	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
179*:				
Enos	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, small stones, thin layer.
Wallson	Good	Probable	Improbable: too sandy.	Fair: slope.
180*:				
Farlow	Poor: large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, area reclaim, slope.
Starley	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.
181*:				
Farlow	Fair: depth to rock, thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, slope.
Starley	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
182*:				
Fiveoh	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
Thermopolis	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
183 Forelle	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
184*:				
Forelle	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Diamondville	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, small stones.
185*:				
Forelle	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
185*:				
Lupinto	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
186*:				
Forkwood	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Keyner	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.
187*:				
Forkwood	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Ulm	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
188*:				
Forkwood	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
Zigweid	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
189*:				
Gateridge	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Taluce Variant	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
190 Griffy	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
191*:				
Griffy	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Emblem	Good	Probable	Probable	Poor: small stones, area reclaim.
192*:				
Grimstone	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
192*:				
Grimstone Variant	Poor: depth to rock, large stones.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: small stones, slope.
193 Haverdad	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
194*:				
Haverdad	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Clarkelen	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
195*:				
Haverdad	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, excess salt.
Clarkelen	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: excess salt.
196 Havermom	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, excess salt.
197 Hawkstone	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
198*:				
Hazton	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.
199 Hiland	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
200 Hiland	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, area reclaim.
201 Hiland	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
202*:				
Inchau	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Clayburn	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
202*:				
Chittum	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
203*:				
Inchau	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Farlow	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
204 Irson	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
205*:				
Irson	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Kezar	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.
206*:				
Irson	Poor: depth to rock, large stones, slope.	Improbable: excess fines, large stones.	Improbable: excess fines, large stones.	Poor: depth to rock, large stones, slope.
Sebud	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
207*:				
Keeline	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Taluce	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
Rock outcrop	Poor: depth to rock slope.	Improbable	Improbable	Poor: depth to rock, slope.
208 Keyner	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
209*:				
Keyner	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.
Absted	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt, excess sodium.
Slickspots.				
210*:				
Keyner	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.
Hiland	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
211*:				
Kezar	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Irson	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Clayburn	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
212 Lander	Fair: shrink-swell, wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim.
213*:				
Leavitt	Fair: low strength, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Coutis	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
214*, 215*:				
Lolite	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, slope.
Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.
216 Lonebear	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
217*:				
Lupinto	Fair: depth to rock, thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
Alcova	Good	Probable	Probable	Poor: small stones, area reclaim.
218 Lupinto Family	Poor: slope.	Probable	Probable	Poor: too sandy, small stones, area reclaim.
219*:				
McFadden	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Edlin	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Blackhall	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
220*:				
Middlewood	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, slope.
Kather	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
221*:				
Milren	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
Bosler	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
Rock River	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
222*:				
Mudray	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, excess sodium.
Bributte	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, excess salt.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
222*:				
Birdsley	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
223*:				
Nathrop	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Starley	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
224*:				
Neldore	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, slope.
Moyerson	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, slope.
Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.
225 Nunnston	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines	Poor: too clayey.
226*:				
Oceanet	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Persayo	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
227*:				
Orella	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, excess salt.
Cadoma	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Petrie	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
228*:				
Orella	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, excess salt.
Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.
229 Orpha	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, slope.
230*:				
Orpha	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, slope.
Tullock	Poor: depth to rock, slope.	Improbable: thin layer.	Improbable: too sandy.	Poor: too sandy, slope.
Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.
231*:				
Orpha	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy, slope.
Vonalee	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, slope.
Roughlock	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, thin layer, slope.
232*:				
Persayo	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Greybull	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, thin layer.
233*:				
Pesmore	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Asholler	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
233*:				
Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.
234 Petrie	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
235*:				
Petrie, wet	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt.
Zigweid, wet	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, excess salt.
236*:				
Petrie	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Arvada	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess sodium.
237*:				
Peyton	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, slope.
Holderness	Fair: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
238: Pits and dumps.				
239*:				
Pokeman	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, small stones.
Threetop	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
240*:				
Poposhia	Fair: shrink-swell.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Blazon	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
241*:				
Rawlins	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
241*:				
McFadden	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Blackhall	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
242*:				
Rawlins	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Rock River	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim, slope.
243*:				
Redsun	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.
244*:				
Redsun	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Rock outcrop	Poor: depth to rock.	Improbable	Improbable	Poor: depth to rock, slope.
Redbow	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, thin layer.
245*:				
Rekop	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.
246*:				
Relsob	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Peyton	Good	Probable	Improbable: too sandy.	Fair: too clayey, small stones, area reclaim.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
247*:				
Rencot	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Blazon	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
248*:				
Rencot	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Rock outcrop	Poor: depth to rock.	Improbable	Improbable	Poor: depth to rock.
249*:				
Rencot	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Duffson	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, slope.
250*:				
Rencot	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Thermopolis	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.
251 Rivra	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
252*:				
Rivra	Good	Probable	Probable	Poor: too sandy, small stones, area reclaim.
Urban land.				
253 Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
254*:				
Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.
Birdsley	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
255*:				
Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.
Cathedral	Poor: depth to rock, slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: depth to rock, small stones, slope.
256*:				
Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.
Ustic Torriorthents	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Rubble land	Poor: large stones, slope.	Improbable: small stones, large stones.	Improbable: large stones.	Poor: area reclaim, small stones, slope.
257 Rock River	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
258*:				
Rock River	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Hawkstone	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
259*:				
Rock River	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
Pinelli	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Blazon	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
260*:				
Rock River	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, area reclaim, slope.
Rawlins	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, slope.
Brownsto	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
261*:				
Rock River	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Ryan Park	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
McFadden	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
262*:				
Rock River	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
Worfman	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
263*:				
Rock River	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
Ryan Park	Good	Probable	Probable	Poor: small stones.
Hawkstone	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
264 Roughlock	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, thin layer.
265*:				
Roughlock	Fair: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Redbow	Poor: depth to rock.	Improbable: excess fines	Improbable: excess fines.	Fair: depth to rock, thin layer.
Redspear	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
266*:				
Roughlock	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, thin layer.
Buffcreek	Fair: large stones.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
267*:				
Rubble land	Poor: large stones, slope.	Improbable: small stones, large stones.	Improbable: large stones.	Poor: area reclaim, small stones, slope.
Ustic Torriorthents	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
268 Ryan Park	Good	Probable	Probable	Poor: small stones.
269*:				
Ryan Park	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
Elk Mountain	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, small stones, thin layer.
270*:				
Saddle	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, slope.
Griffy	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
271: Salt flats.				
272 Samday	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, slope.
273*:				
Savageton	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Samday	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
274*:				
Shingle	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Samday	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey, slope.
275*:				
Shingle	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Taluce	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.
276*:				
Shingle	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
Theedle	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, slope.
277 Silhouette	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
278*:				
Silhouette	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Petrie	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
279*:				
Starley	Poor: depth to rock.	Improbable	Improbable	Poor: depth to rock, small stones.
Rock outcrop	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
280*:				
Stunner	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
280*:				
Pinelli	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
281*:				
Sunup	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
Kishona	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.
282*:				
Terro	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, thin layer, slope.
Vonalee	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
283*:				
Theedle	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Shingle	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
Kishona	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones, slope.
284*:				
Threetop	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Sunup	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Frontier	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
285 Tisworth	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess salt, excess sodium.
286*:				
Travson	Poor: depth to rock, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
286*:				
Rock outcrop	Poor: depth to rock, slope.	Improbable	Improbable	Poor: depth to rock, slope.
287*:				
Typic Fluvaquents	Poor: wetness.	Improbable: excess fines.	Improbable: excess fines.	Poor: wetness.
Aquic Ustifluvents	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Good.
288 Typic Haplaquolls	Fair: shrink-swell, wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey, small stones.
289: Typic Torrifluvents.				
290*:				
Uffens, thick surface	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.
Uffens	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.
291*:				
Uffens	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: excess sodium.
Typic Torrifluvents.				
292 Ulm	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
293*:				
Ulm	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Absted	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, excess salt, excess sodium.
294 Ulrant	Fair: depth to rock, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
295*: Urban land.				
Clarkelen	Good	Probable	Probable	Poor: area reclaim.
296*: Urban land.				

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
296*:				
Docpar	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: too sandy.
297*:				
Urban land.				
Savageton	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
Samday	Poor: depth to rock, shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, too clayey.
298*:				
Urban land.				
Silhouette	Poor: shrink-swell, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey.
299*:				
Urban land.				
Theedle	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, slope.
Shingle	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, slope.
300 Vonalee	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy.
301*:				
Vonalee	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, slope.
Hiland	Good	Improbable: excess fines.	Improbable: excess fines.	Good.
302*:				
Vonalee	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too sandy, slope.
Slickspots.				
303 Whiteriver	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
304*:				
Woosley	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
304*:				
Starley	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones, slope.
305*:				
Worf	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
Bowbac	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, small stones.
306*:				
Worf	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock.
Briggsdale	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: thin layer.
307*:				
Worf Variant	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Poor: depth to rock, small stones.
Cushman Variant	Poor: depth to rock.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, small stones.
Peyton	Good	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
308*:				
Worfstone	Poor: depth to rock, slope.	Improbable: thin layer.	Improbable: thin layer.	Poor: depth to rock, small stones, slope.
McFadden	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones.
Lupinto	Good	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
309*:				
Zeomont	Good	Probable	Improbable: too sandy.	Poor: too sandy.
Ryan Park	Good	Probable	Probable	Poor: small stones.
310 Zigweid	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.

See footnote at end of table.

TABLE 13.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
311*:				
Zigweid--------------	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Theedle--------------	Poor: depth to rock, low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: depth to rock, too clayey, slope.
312*:				
Zigweid--------------	Poor: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: too clayey.
Urban land.				

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 14.--WATER MANAGEMENT

(Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated. The information in this table indicates the dominant soil condition but does not eliminate the need for onsite investigation)

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
101 Absher	Slight	Severe: excess sodium, excess salt.	Severe: no water.	Deep to water	Droughty, percs slowly.	Too arid, excess salt, excess sodium.
102*:						
Adel	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Slope.
Pagosa	Moderate: depth to rock, slope.	Moderate: thin layer, hard to pack, large stones.	Severe: no water.	Deep to water	Slope, percs slowly.	Large stones, percs slowly.
103*:						
Alcova	Severe: seepage.	Moderate: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, droughty.
Rock River	Severe: seepage.	Slight	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid.
104*:						
Alcova	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, slope, droughty.
Stunner	Severe: seepage, slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope	Too arid, slope, erodes easily.
105*:						
Alflack	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
Foxton	Moderate: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, large stones, soil blowing.	Large stones, erodes easily.
106*:						
Alflack	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
Irson	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
Foxton Variant	Moderate: seepage, depth to rock, slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope	Erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
107 Almy	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Too arid, slope, erodes easily.
108 Amodac	Moderate: slope.	Moderate: piping, excess salt.	Severe: no water.	Deep to water	Slope, excess salt.	Too arid, erodes easily.
109*: Amodac	Moderate: slope.	Moderate: piping, excess salt.	Severe: no water.	Deep to water	Slope, soil blowing, excess salt.	Too arid, erodes easily.
Keyner	Moderate: slope.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, excess sodium.
110 Aquic Ustifluvents	Slight	Severe: wetness, excess salt.	Severe: salty water.	Flooding, frost action.	Wetness, flooding.	Wetness, excess salt.
111*: Aquic Ustifluvents	Moderate: slope.	Severe: wetness, excess salt.	Severe: salty water.	Frost action, slope.	Slope, wetness.	Wetness, excess salt.
Orpha	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too arid, droughty.
112*: Arvada	Slight	Severe: excess sodium.	Severe: no water.	Deep to water	Percs slowly	Too arid, excess sodium, erodes easily.
Absted	Moderate: slope.	Severe: excess sodium, excess salt.	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, excess sodium, erodes easily.
Slickspots.						
113*: Arvada	Slight	Severe: excess sodium.	Severe: no water.	Deep to water	Percs slowly	Too arid, excess sodium, erodes easily.
Slickspots.						
114*: Bachus	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, erodes easily, depth to rock.
Nathrop	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
115*:						
Bachus-----------	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, erodes easily, depth to rock.
Clayburn---------	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope----------	Favorable.
116*:						
Bachus-----------	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, erodes easily, depth to rock.
Pagosa-----------	Severe: slope.	Moderate: thin layer, hard to pack, large stones.	Severe: no water.	Deep to water	Slope, percs slowly.	Large stones, slope, percs slowly.
117--------------- Badland	Severe: depth to rock, slope.	Slight---------	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
118*:						
Badwater---------	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, droughty.	Slope, droughty.
Rubble land------	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
119*:						
Barnum-----------	Moderate: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Soil blowing, excess salt.	Too arid, excess salt, erodes easily.
Redbank----------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Soil blowing, flooding.	Too arid, erodes easily.
120--------------- Bateson	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, erodes easily.
121--------------- Bessemer	Moderate: seepage, slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, large stones.
122--------------- Bessemer	Moderate: seepage, slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, large stones.
123*:						
Bessemer---------	Moderate: seepage, slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, large stones.
Urban land.						
124--------------- Blackdraw	Moderate: slope.	Severe: excess salt, piping.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
125*:						
Blackdraw----------	Severe: slope.	Severe: excess salt, piping.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, slope, erodes easily.
Lolite-----------	Severe: depth to rock, slope.	Severe: excess salt, piping.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, slope, erodes easily.
Gullied land.						
126*:						
Blazon-----------	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.
Worfman----------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, depth to rock.
127*:						
Blazon-----------	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.
Cragosen---------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Too arid, slope, droughty.
Worfman----------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, depth to rock.
128*:						
Boettcher--------	Severe: slope.	Moderate: thin layer, hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Too arid, slope, depth to rock.
Brownsto---------	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, slope, droughty.
129*:						
Boettcher--------	Moderate: depth to rock, slope.	Moderate: thin layer, hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Too arid, depth to rock, percs slowly.
Pinelli----------	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope----------	Too arid, erodes easily.
Worfman----------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, depth to rock.
130*:						
Bosler-----------	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, droughty.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
130*:						
Alcova	Severe: seepage.	Moderate: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, droughty.
131*:						
Bosler	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, slope, droughty.
Hiland	Severe: seepage.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid.
132*:						
Bowbac	Severe: seepage.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, depth to rock.
Hiland	Severe: seepage.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid.
133*:						
Bowbac	Severe: seepage, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, fast intake, soil blowing.	Too arid, slope, depth to rock.
Hiland	Severe: seepage.	Slight	Severe: no water.	Deep to water	Slope, fast intake, soil blowing.	Too arid.
Worf	Severe: depth to rock.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, fast intake, soil blowing.	Too arid, depth to rock.
134*:						
Bowbac	Severe: seepage, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, slope, depth to rock.
Taluce	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, slope, depth to rock.
Terro	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, slope, depth to rock.
135 Bridger	Severe: slope.	Slight	Severe: no water.	Deep to water	Slope, percs slowly.	Slope, percs slowly.
136*:						
Brokenhorn	Moderate: slope.	Moderate: hard to pack, piping.	Severe: no water.	Deep to water	Slope, percs slowly, excess salt.	Too arid, erodes easily.
Hyshot	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Too arid, slope, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Grassed waterways
137*:						
Brownsto	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, slope, droughty.
Lupinto	Severe: seepage, slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, slope, droughty.
138*:						
Buffcreek	Moderate: seepage, slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Too arid, large stones.
Redarrow	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Too arid, slope, erodes easily.
139*:						
Cabin	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Slope, droughty.
Herbman	Severe: depth to rock, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
140*:						
Cadoma	Moderate: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, erodes easily.
Renohill	Moderate: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Too arid, erodes easily, depth to rock.
Samday	Severe: depth to rock.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, erodes easily.
141 Cambria	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Too arid, erodes easily.
142*:						
Cambria	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, erodes easily.
Zigweid	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Too arid, slope, erodes easily.
143*:						
Cambria	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Too arid, erodes easily.
Zigweid	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Too arid, slope, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
144*:						
Castner----------	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Large stones, slope, droughty.
Chincap----------	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Slope, depth to rock.
Rock outcrop-----	Severe: depth to rock, slope.	Slight---------	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
145*:						
Castner----------	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Large stones, slope, droughty.
Rock outcrop-----	Severe: depth to rock, slope.	Slight---------	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
146--------------- Cavegulch	Moderate: slope.	Moderate: piping, excess salt.	Severe: no water.	Deep to water	Slope, erodes easily, excess salt.	Too arid, erodes easily.
147*:						
Cavegulch--------	Moderate: slope.	Moderate: piping, excess salt.	Severe: no water.	Deep to water	Slope, erodes easily, excess salt.	Too arid, erodes easily.
Brokenhorn-------	Moderate: slope.	Moderate: hard to pack, piping.	Severe: no water.	Deep to water	Slope, percs slowly, excess salt.	Too arid, erodes easily.
148--------------- Chalkcreek	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Too arid, erodes easily.
149*:						
Chipendale-------	Moderate: slope.	Moderate: hard to pack, piping.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, erodes easily.
Chipenhill-------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, percs slowly.	Too arid, slope, erodes easily.
150*:						
Chipendale-------	Moderate: slope.	Moderate: hard to pack, piping.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, erodes easily.
Razsun-----------	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Too arid, slope, erodes easily.
151--------------- Chipenhill	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, percs slowly.	Too arid, slope, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
152*:						
Chipenhill	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, percs slowly.	Too arid, slope, erodes easily.
Rock outcrop	Severe: depth to rock, slope.	Severe: area reclaim.	Severe: no water.	Deep to water	Depth to rock, slope.	Slope, depth to rock.
153*:						
Chittum	Severe: depth to rock.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Depth to rock.
Nielsen	Severe: depth to rock.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Large stones, droughty.
Rock outcrop	Severe: depth to rock, slope.	Slight	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
154*:						
Chittum	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
Sneffels	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Slope, depth to rock, percs slowly.
155 Clarkelen	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Droughty, soil blowing.	Too arid, droughty.
156*:						
Clayburn	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Favorable.
Moslander	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Flooding, frost action.	Wetness, flooding, excess salt.	Wetness, erodes easily.
157*:						
Coalmont	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Too arid, slope, erodes easily.
Milren	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, erodes easily, percs slowly.
Cragosen	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Too arid, slope, droughty.
158 Connerton	Moderate: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Erodes easily	Too arid, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Grassed waterways
159--------------- Copeman	Moderate: seepage, slope.	Slight---------	Severe: no water.	Deep to water	Slope, erodes easily.	Too arid, erodes easily.
160--------------- Crago	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Too arid, large stones, slope.
161*:						
Crago------------	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Too arid, large stones, slope.
Pensore----------	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Too arid, large stones, slope.
162--------------- Cragosen	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Too arid, slope, droughty.
163*:						
Cragosen---------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Too arid, slope, droughty.
Chalkcreek-------	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, erodes easily.	Too arid, erodes easily.
164*:						
Cragosen Variant-	Severe: depth to rock.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Too arid, droughty.
Brownsto Variant-	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Too arid, slope, droughty.
165--------------- Curecanti	Moderate: seepage, slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, droughty.
166--------------- Curecanti Variant	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, erodes easily.
167*:						
Cushman----------	Severe: slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, slope, erodes easily.
Forkwood---------	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope----------	Too arid, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
168*:						
Cushool	Moderate: seepage, depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, depth to rock.
Worfstone	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, slope, droughty.
169*:						
Decross	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Slope, erodes easily.
Woosley	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
170*:						
Delphill	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.
Blazon	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.
171*:						
Delplain	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, slow intake.	Too arid, slope, droughty.
Rock outcrop	Severe: depth to rock, slope.	Slight	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
172*:						
Diamondville	Moderate: seepage, depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, erodes easily.
Worfman	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, depth to rock.
173 Docpar	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Favorable	Too arid.
174 Draknab	Severe: seepage.	Severe: seepage, piping.	Severe: no water.	Deep to water	Droughty, fast intake.	Too arid, droughty.
175: Dune land.						
176*:						
Edlin	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, slope, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
176*:						
Rock River	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, slope.
Bosler	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, droughty.
177*:						
Edlin	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, erodes easily.
Ryan Park	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid.
178*:						
Effington	Moderate: slope.	Severe: excess sodium.	Severe: no water.	Deep to water	Slope, droughty, percs slowly.	Too arid, excess salt, excess sodium.
Uffens	Moderate: slope.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, excess sodium, erodes easily.
179*:						
Enos	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too arid, slope, droughty.
Wallson	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, fast intake, soil blowing.	Too arid, slope.
180*:						
Farlow	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
Starley	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
Rock outcrop	Severe: depth to rock, slope.	Slight	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
181*:						
Farlow	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
Starley	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
182*:						
Fiveoh	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Too arid, slope, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
182*:						
Thermopolis	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, depth to rock.
183 Forelle	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Too arid, erodes easily.
184*:						
Forelle	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Too arid, erodes easily.
Diamondville	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, slope, erodes easily.
185*:						
Forelle	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope	Too arid, erodes easily.
Lupinto	Severe: slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, large stones, slope.
186*:						
Forkwood	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Too arid, erodes easily.
Keyner	Moderate: slope.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, excess sodium.
187*:						
Forkwood	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Too arid, erodes easily.
Ulm	Slight	Moderate: hard to pack.	Severe: no water.	Deep to water	Percs slowly	Too arid, erodes easily, percs slowly.
188*:						
Forkwood	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, erodes easily.
Zigweid	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Too arid, slope, erodes easily.
189*:						
Gateridge	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing, percs slowly.	Slope, erodes easily, depth to rock.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
189*:						
Taluce Variant---	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, slope, erodes easily.
190--------------- Griffy	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, slope.
191*:						
Griffy-----------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid.
Emblem-----------	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, droughty.
192*:						
Grimstone--------	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
Grimstone Variant	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
193--------------- Haverdad	Moderate: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Favorable------	Too arid, erodes easily.
194*:						
Haverdad---------	Moderate: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Favorable------	Too arid, erodes easily.
Clarkelen--------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Soil blowing---	Too arid.
195*:						
Haverdad---------	Moderate: seepage.	Moderate: piping.	Severe: no water.	Deep to water	Excess salt----	Too arid, erodes easily.
Clarkelen--------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Soil blowing, excess salt.	Too arid.
196--------------- Havermom	Slight---------	Severe: piping.	Severe: slow refill.	Deep to water	Soil blowing, excess salt.	Too arid, erodes easily.
197--------------- Hawkstone	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, fast intake, soil blowing.	Too arid, slope.
198*:						
Hazton-----------	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, droughty, depth to rock.
Rock outcrop-----	Severe: depth to rock, slope.	Slight---------	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
199--------------- Hiland	Severe: seepage, slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, fast intake, soil blowing.	Too arid, slope.
200--------------- Hiland	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too arid, erodes easily, droughty.
201--------------- Hiland	Severe: seepage.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid.
202*:						
Inchau-----------	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, erodes easily, depth to rock.
Clayburn---------	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope----------	Slope.
Chittum----------	Severe: depth to rock.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Depth to rock.
203*:						
Inchau-----------	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, erodes easily, depth to rock.
Farlow-----------	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, droughty.	Slope, droughty.
204--------------- Irson	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
205*:						
Irson------------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
Kezar------------	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, droughty, depth to rock.
Rock outcrop-----	Severe: depth to rock, slope.	Slight---------	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
206*:						
Irson------------	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
Sebud------------	Severe: slope.	Moderate: piping, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
207*:						
Keeline----------	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, slope, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
207*:						
Taluce-----------	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, slope, depth to rock.
Rock outcrop-----	Severe: depth to rock, slope.	Severe: area reclaim.	Severe: no water.	Deep to water	Depth to rock, slope.	Slope, depth to rock.
208--------------- Keyner	Moderate: slope.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, excess sodium.
209*:						
Keyner-----------	Moderate: slope.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Slope, soil blowing, percs slowly.	Too arid, excess sodium.
Absted-----------	Moderate: slope.	Severe: excess sodium, excess salt.	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, excess sodium, erodes easily.
Slickspots.						
210*:						
Keyner-----------	Slight---------	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Soil blowing, percs slowly.	Too arid, excess sodium.
Hiland-----------	Severe: seepage.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid.
211*:						
Kezar------------	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, droughty, depth to rock.
Irson------------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
Clayburn---------	Severe: slope.	Slight---------	Severe: no water.	Deep to water	Slope, soil blowing.	Slope.
212--------------- Lander	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Flooding, frost action.	Wetness, flooding.	Erodes easily.
213*:						
Leavitt----------	Severe: slope.	Moderate: thin layer, piping.	Severe: no water.	Deep to water	Slope----------	Slope, erodes easily.
Coutis-----------	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Slope, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
214*, 215*:						
Lolite-----------	Severe: depth to rock, slope.	Severe: excess salt.	Severe: no water.	Deep to water	Slope, droughty, slow intake.	Too arid, slope, erodes easily.
Rock outcrop-----	Severe: depth to rock, slope.	Severe: area reclaim.	Severe: no water.	Deep to water	Depth to rock, slope.	Slope, depth to rock.
216--------------- Lonebear	Moderate: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly, excess salt.	Too arid, erodes easily.
217*:						
Lupinto----------	Severe: slope.	Moderate: thin layer, large stones.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, large stones, slope.
Alcova-----------	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, droughty.
218--------------- Lupinto Family	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Too arid, large stones, slope.
219*:						
McFadden---------	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, slope.
Edlin------------	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, slope, erodes easily.
Blackhall--------	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, slope, erodes easily.
220*:						
Middlewood-------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.
Kather-----------	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Too arid, slope, depth to rock.
221*:						
Milren-----------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, percs slowly.	Too arid, erodes easily.
Bosler-----------	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, droughty.
Rock River-------	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
222*:						
Mudray	Severe: depth to rock, slope.	Severe: excess sodium.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Too arid, slope, excess sodium.
Bributte	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Too arid, slope, excess salt.
Birdsley	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Too arid, slope, erodes easily.
223*:						
Nathrop	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
Starley	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
224*:						
Neldore	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, slow intake, percs slowly.	Too arid, slope, depth to rock.
Moyerson	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Too arid, slope, depth to rock.
Rock outcrop	Severe: depth to rock, slope.	Severe: area reclaim.	Severe: no water.	Deep to water	Depth to rock, slope.	Slope, depth to rock.
225 Nunnston	Severe: slope.	Slight	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, slope, erodes easily.
226*:						
Oceanet	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, slope, erodes easily.
Persayo	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Too arid, slope, erodes easily.
227*:						
Orella	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Too arid, slope, erodes easily.
Cadoma	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, slope, erodes easily.
Petrie	Moderate: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
228*:						
Orella	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Too arid, slope, erodes easily.
Rock outcrop	Severe: depth to rock, slope.	Severe: area reclaim.	Severe: no water.	Deep to water	Depth to rock, slope.	Slope, depth to rock.
229 Orpha	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too arid, slope, droughty.
230*:						
Orpha	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too arid, slope, droughty.
Tullock	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too arid, slope, droughty.
Rock outcrop	Severe: depth to rock, slope.	Severe: area reclaim.	Severe: no water.	Deep to water	Depth to rock, slope.	Slope, depth to rock.
231*:						
Orpha	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too arid, slope, droughty.
Vonalee	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too arid, slope, droughty.
Roughlock	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily, excess salt.	Too arid, slope, erodes easily.
232*:						
Persayo	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Too arid, slope, erodes easily.
Greybull	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Too arid, slope, erodes easily.
233*:						
Pesmore	Severe: slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
Asholler	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Too arid, large stones, slope.
Rock outcrop	Severe: depth to rock, slope.	Slight	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
234 Petrie	Slight	Moderate: hard to pack.	Severe: no water.	Deep to water	Percs slowly	Too arid, erodes easily.
235*:						
Petrie, wet	Slight	Severe: wetness.	Severe: slow refill.	Percs slowly, flooding, excess salt.	Wetness, droughty, percs slowly.	Wetness, erodes easily, droughty.
Zigweid, wet	Moderate: seepage.	Severe: wetness.	Moderate: slow refill.	Flooding	Wetness, flooding, excess salt.	Too arid, wetness, excess salt.
236*:						
Petrie	Moderate: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, erodes easily.
Arvada	Moderate: slope.	Severe: excess sodium.	Severe: no water.	Deep to water	Slope, soil blowing, percs slowly.	Too arid, excess sodium, erodes easily.
237*:						
Peyton	Severe: seepage, slope.	Slight	Severe: no water.	Deep to water	Slope	Too arid, slope.
Holderness	Moderate: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, percs slowly.
238: Pits and dumps.						
239*:						
Pokeman	Moderate: depth to rock, seepage, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, erodes easily.
Threetop	Moderate: seepage, depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, erodes easily.
240*:						
Poposhia	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, erodes easily.
Blazon	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.
241*:						
Rawlins	Severe: seepage.	Slight	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, droughty.
McFadden	Severe: seepage.	Moderate: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, droughty.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Limitations for-- Embankments, dikes, and levees	Limitations for-- Aquifer-fed excavated ponds	Features affecting-- Drainage	Features affecting-- Irrigation	Features affecting-- Grassed waterways
241*:						
Blackhall	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, slope, erodes easily.
242*:						
Rawlins	Severe: seepage, slope.	Slight	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, slope, droughty.
Rock River	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, slope.
243*:						
Redsun	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Too arid, large stones, slope.
Rock outcrop	Severe: depth to rock, slope.	Slight	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
244*:						
Redsun	Severe: depth to rock, slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Too arid, large stones, slope.
Rock outcrop	Severe: depth to rock, slope.	Slight	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
Redbow	Moderate: seepage, depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Too arid, erodes easily.
245*:						
Rekop	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.
Rock outcrop	Severe: depth to rock, slope.	Severe: area reclaim.	Severe: no water.	Deep to water	Depth to rock, slope.	Slope, depth to rock.
246*:						
Relsob	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, slope, droughty.
Peyton	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, erodes easily.
247*:						
Rencot	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Too arid, large stones, slope.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Grassed waterways
247*:						
Blazon	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.
248*:						
Rencot	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Too arid, large stones, slope.
Rock outcrop	Severe: depth to rock, slope.	Slight	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
249*:						
Rencot	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Too arid, large stones, slope.
Duffson	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.
250*:						
Rencot	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, large stones, slope.
Thermopolis	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, depth to rock.
Rock outcrop	Severe: depth to rock, slope.	Slight	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
251 Rivra	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Deep to water	Slope, droughty, soil blowing.	Too arid, droughty.
252*:						
Rivra	Severe: seepage.	Severe: seepage.	Severe: cutbanks cave.	Deep to water	Slope, droughty, soil blowing.	Too arid, droughty.
Urban land.						
253 Rock outcrop	Severe: depth to rock, slope.	Severe: area reclaim.	Severe: no water.	Deep to water	Depth to rock, slope.	Slope, depth to rock.
254*:						
Rock outcrop	Severe: depth to rock, slope.	Severe: area reclaim.	Severe: no water.	Deep to water	Depth to rock, slope.	Slope, depth to rock.
Birdsley	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Too arid, slope, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
255*:						
Rock outcrop-----	Severe: depth to rock, slope.	Slight---------	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
Cathedral--------	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Large stones, slope, droughty.
256*:						
Rock outcrop-----	Severe: depth to rock, slope.	Slight---------	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
Ustic Torriorthents---	Severe: depth to rock, slope.	Slight---------	Severe: no water.	Deep to water	Depth to rock, slope.	Slope, depth to rock.
Rubble land------	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
257--------------- Rock River	Severe: seepage.	Slight---------	Severe: no water.	Deep to water	Soil blowing---	Too arid.
258*:						
Rock River-------	Severe: seepage, slope.	Slight---------	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, slope.
Hawkstone--------	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, slope.
259*:						
Rock River-------	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, slope.
Pinelli----------	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope----------	Too arid, erodes easily.
Blazon-----------	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.
260*:						
Rock River-------	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, slope.
Rawlins----------	Severe: seepage, slope.	Slight---------	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, slope, droughty.
Brownsto---------	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, slope, droughty.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
261*:						
Rock River	Severe: seepage, slope.	Slight	Severe: no water.	Deep to water	Slope, fast intake, soil blowing.	Too arid, slope.
Ryan Park	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, slope.
McFadden	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, slope.
262*:						
Rock River	Severe: seepage, slope.	Slight	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, slope.
Worfman	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, slope, depth to rock.
263*:						
Rock River	Severe: seepage.	Slight	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid.
Ryan Park	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too arid, droughty.
Hawkstone	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid.
264 Roughlock	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily, excess salt.	Too arid, erodes easily.
265*:						
Roughlock	Moderate: seepage, depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily, excess salt.	Too arid, erodes easily.
Redbow	Moderate: seepage, depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Too arid, erodes easily.
Redspear	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Too arid, slope, erodes easily.
266*:						
Roughlock	Moderate: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, erodes easily, excess salt.	Too arid, erodes easily.
Buffcreek	Moderate: seepage, slope.	Moderate: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Too arid, large stones.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
267*:						
Rubble land------	Severe: seepage, slope.	Severe: seepage, large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
Ustic Torriorthents---	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Slope, droughty, depth to rock.
268--------------- Ryan Park	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too arid, droughty.
269*:						
Ryan Park--------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid.
Elk Mountain-----	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, slope, depth to rock.
270*:						
Saddle-----------	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, slope, depth to rock.
Griffy-----------	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid.
271: Salt flats.						
272--------------- Samday	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, slow intake, percs slowly.	Too arid, slope, depth to rock.
273*:						
Savageton--------	Moderate: depth to rock, slope.	Moderate: thin layer, hard to pack.	Severe: no water.	Deep to water	Slope, slow intake, percs slowly.	Too arid, erodes easily.
Samday-----------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, slope, depth to rock.
274*:						
Shingle----------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.
Samday-----------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, slow intake, percs slowly.	Too arid, slope, erodes easily.
275*:						
Shingle----------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Grassed waterways
275*:						
Taluce	Severe: depth to rock, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, slope, depth to rock.
Rock outcrop	Severe: depth to rock, slope.	Severe: area reclaim.	Severe: no water.	Deep to water	Depth to rock, slope.	Slope, depth to rock.
276*:						
Shingle	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.
Theedle	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, slope, erodes easily.
277 Silhouette	Moderate: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, erodes easily, percs slowly.
278*:						
Silhouette	Moderate: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, erodes easily, percs slowly.
Petrie	Moderate: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, erodes easily.
279*:						
Starley	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
Rock outcrop	Severe: depth to rock, slope.	Slight	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
280*:						
Stunner	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, slope, erodes easily.
Pinelli	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Too arid, erodes easily.
281*:						
Sunup	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Too arid, slope, droughty.
Kishona	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Too arid, slope, erodes easily.
Rock outcrop	Severe: depth to rock, slope.	Slight	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
282*:						
Terro	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, fast intake, soil blowing.	Too arid, slope, depth to rock.
Vonalee	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, droughty.
283*:						
Theedle	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.
Shingle	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.
Kishona	Severe: slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Too arid, slope, erodes easily.
284*:						
Threetop	Severe: seepage.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, erodes easily.
Sunup	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, droughty, depth to rock.	Too arid, slope, droughty.
Frontier	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, slope, depth to rock.
285 Tisworth	Slight	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Droughty, soil blowing.	Too arid, excess sodium, erodes easily.
286*:						
Travson	Severe: depth to rock, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, slope, droughty.
Rock outcrop	Severe: depth to rock, slope.	Slight	Severe: no water.	Deep to water	Slope, depth to rock.	Slope, depth to rock.
287*:						
Typic Fluvaquents	Slight	Severe: wetness.	Slight	Flooding	Wetness, flooding.	Wetness.
Aquic Ustifluvents	Slight	Severe: wetness, excess salt.	Severe: salty water.	Frost action	Wetness	Wetness, excess salt.
288 Typic Haplaquolls	Severe: seepage.	Severe: wetness.	Moderate: slow refill.	Frost action	Wetness	Erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
289: Typic Torrifluvents.						
290*: Uffens, thick surface	Moderate: slope.	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, excess sodium, erodes easily.
Uffens	Slight	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Droughty, soil blowing.	Too arid, excess sodium, erodes easily.
291*: Uffens	Slight	Severe: piping, excess sodium.	Severe: no water.	Deep to water	Droughty, soil blowing.	Too arid, excess sodium, erodes easily.
Typic Torrifluvents.						
292 Ulm	Moderate: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, erodes easily, percs slowly.
293*: Ulm	Moderate: slope.	Moderate: hard to pack.	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, erodes easily, percs slowly.
Absted	Moderate: slope.	Severe: excess sodium, excess salt.	Severe: no water.	Deep to water	Slope, soil blowing, percs slowly.	Too arid, excess sodium, erodes easily.
294 Ulrant	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope	Slope, erodes easily.
295*: Urban land.						
Clarkelen	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Droughty, soil blowing.	Too arid, droughty.
296*: Urban land.						
Docpar	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope	Too arid.
297*: Urban land.						
Savageton	Severe: slope.	Moderate: thin layer, hard to pack.	Severe: no water.	Deep to water	Slope, slow intake, percs slowly.	Too arid, slope, erodes easily.
Samday	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, slow intake, percs slowly.	Too arid, slope, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Irrigation	Grassed waterways
298*: Urban land.						
Silhouette	Slight	Moderate: hard to pack.	Severe: no water.	Deep to water	Percs slowly	Too arid, erodes easily, percs slowly.
299*: Urban land.						
Theedle	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.
Shingle	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.
300 Vonalee	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too arid, droughty.
301*: Vonalee	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too arid, slope, droughty.
Hiland	Severe: seepage.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid.
302*: Vonalee	Severe: seepage, slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, slope, droughty.
Slickspots.						
303 Whiteriver	Moderate: slope.	Slight	Severe: no water.	Deep to water	Slope, percs slowly.	Too arid, erodes easily, percs slowly.
304*: Woosley	Severe: slope.	Severe: piping.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
Starley	Severe: depth to rock, slope.	Severe: large stones.	Severe: no water.	Deep to water	Slope, large stones, droughty.	Large stones, slope, droughty.
305*: Worf	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, slope, depth to rock.
Bowbac	Severe: seepage.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid, depth to rock.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Grassed waterways
306*:						
Worf-------------	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.
Briggsdale-------	Moderate: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, percs slowly, depth to rock.	Too arid, erodes easily, depth to rock.
307*:						
Worf Variant-----	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, slope, depth to rock.
Cushman Variant--	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, soil blowing, depth to rock.	Too arid, slope, erodes easily.
Peyton-----------	Severe: seepage.	Slight---------	Severe: no water.	Deep to water	Slope, soil blowing.	Too arid.
308*:						
Worfstone--------	Severe: depth to rock, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, slope, droughty.
McFadden---------	Severe: seepage, slope.	Moderate: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, soil blowing.	Too arid, slope, droughty.
Lupinto----------	Severe: seepage, slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope, droughty.	Too arid, slope, droughty.
309*:						
Zeomont----------	Severe: seepage, slope.	Severe: seepage, piping.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too arid, slope, droughty.
Ryan Park--------	Severe: seepage.	Severe: seepage.	Severe: no water.	Deep to water	Slope, droughty, fast intake.	Too arid, droughty.
310--------------- Zigweid	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope----------	Too arid, erodes easily.
311*:						
Zigweid----------	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope----------	Too arid, erodes easily.
Theedle----------	Severe: slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock.	Too arid, slope, erodes easily.

See footnote at end of table.

TABLE 14.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for-- Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Features affecting-- Drainage	Irrigation	Grassed waterways
312*:						
Zigweid----------	Moderate: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope----------	Too arid, erodes easily.
Urban land.						

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 15.--ENGINEERING INDEX PROPERTIES

(The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated)

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
101----------- Absher	0-3	Loam----------	CL	A-6	0	0	95-100	75-100	65-90	60-75	30-35	10-15
	3-19	Silty clay, clay.	CL, CH	A-7	0	0	95-100	75-100	70-100	60-80	45-60	20-30
	19-60	Silty clay loam, silty clay, clay loam, clay.	CL	A-6, A-7	0	0	95-100	85-100	80-90	80-90	35-45	15-25
102*:												
Adel---------	0-5	Loam----------	CL-ML	A-4	0	0-5	85-100	85-100	70-90	60-80	25-30	5-10
	5-21	Clay loam, loam.	CL-ML, CL	A-4, A-6	0	0-5	85-100	85-100	70-90	60-80	25-35	5-15
	21-60	Clay loam, loam, gravelly loam.	CL-ML, CL	A-4, A-6	0	0-10	80-100	75-95	65-85	55-75	25-35	5-15
Pagosa-------	0-13	Loam----------	CL	A-6	0	0-10	95-100	90-100	70-85	65-75	30-35	10-15
	13-20	Clay loam, cobbly clay loam.	CL	A-6, A-7	0-10	5-25	75-95	70-90	60-75	55-70	35-50	15-25
	20-39	Clay, clay loam, cobbly clay.	CL, CH	A-7	0-10	5-25	75-95	70-90	60-85	55-80	45-60	25-35
	39-50	Cobbly clay loam, stony clay loam.	CL, SC, GC	A-6, A-7	10-25	10-25	70-80	65-75	60-70	45-60	35-50	15-25
	50	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
103*:												
Alcova-------	0-2	Sandy loam----	SM	A-2	0	0-5	85-95	80-90	50-60	25-35	---	NP
	2-13	Sandy clay loam, gravelly sandy clay loam.	GC, SC	A-2, A-6	0	0-5	60-95	55-90	50-75	25-50	30-40	10-20
	13-25	Gravelly loam, gravelly sandy loam.	GM-GC, SC-SM	A-2, A-4	0	0-5	55-80	50-75	40-60	30-45	20-30	5-10
	25-60	Very gravelly loam, very gravelly sandy loam.	GM-GC, GM, GC	A-2, A-1-b	0	5-25	50-55	45-50	30-45	20-35	20-30	NP-10
Rock River---	0-2	Sandy loam----	SM, SC-SM	A-2-4, A-4	0	0	95-100	95-100	75-85	30-45	<30	NP-10
	2-13	Sandy clay loam.	SC, CL	A-6	0	0	95-100	95-100	80-90	45-60	25-35	10-15
	13-60	Fine sandy loam, sandy loam.	SC-SM, SC	A-4	0	0	95-100	95-100	80-90	40-50	<30	5-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
104*:												
Alcova-------	0-4	Sandy loam----	SM	A-2-4	0	0	95-100	95-100	65-80	25-35	<25	NP-5
	4-16	Sandy clay loam, gravelly sandy clay loam.	SC	A-6, A-2-6	0	0-5	70-95	65-90	50-75	30-50	30-40	10-20
	16-32	Very gravelly loam.	GM-GC	A-2-4	0	5-25	45-55	40-50	30-40	15-30	20-30	5-10
	32-60	Very gravelly sand, very gravelly coarse sand.	GP-GM, GP, SP-SM, SP	A-1	0	5-25	50-55	45-50	15-35	0-10	---	NP
Stunner------	0-4	Loam----------	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	85-95	60-70	25-35	5-15
	4-17	Clay loam, loam.	CL	A-6	0	0	95-100	95-100	85-95	70-80	25-40	10-20
	17-48	Loam----------	CL	A-6	0	0	90-100	90-100	80-95	60-70	25-35	10-20
	48-60	Coarse sand, gravelly coarse sand.	SW, SP-SM, SP	A-1-b	0	0-5	65-90	60-85	35-50	0-10	---	NP
105*:												
Alflack------	0-2	Loamy fine sand.	SM	A-2	0-10	5-10	90-100	90-100	75-85	20-35	---	NP
	2-22	Very channery loamy fine sand, very flaggy loamy sand.	SM	A-2	20-35	25-35	75-85	70-80	50-70	15-30	---	NP
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Foxton-------	0-3	Fine sandy loam.	SM	A-2, A-4	0	0	90-100	85-100	70-90	30-40	<25	NP-5
	3-12	Cobbly loam, fine sandy loam.	CL-ML, CL, SC-SM, SC	A-4	0	10-30	90-100	80-90	70-80	45-60	25-30	5-10
	12-34	Cobbly clay, clay loam.	CL, CH	A-7	0	10-35	90-100	80-90	70-80	60-70	45-60	20-35
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
106*:												
Alflack------	0-2	Flaggy sandy loam.	SM	A-2	15-25	5-15	90-100	90-100	50-70	20-35	---	NP
	2-26	Very channery loamy fine sand, very flaggy loamy sand.	SM	A-2	20-35	25-35	75-85	70-80	50-70	15-30	---	NP
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Irson--------	0-8	Very gravelly loam.	SC-SM	A-2, A-1	0-10	10-20	65-85	45-60	30-50	20-35	25-35	5-10
	8	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
106*:												
Foxton Variant-----	0-2	Loam----------	CL-ML	A-4	0	0-5	95-100	90-100	70-90	60-80	25-30	5-10
	2-28	Very fine sandy loam, loam.	CL-ML	A-4	0	0-5	95-100	90-100	80-100	55-70	25-30	5-10
	28-46	Gravelly clay loam, clay loam.	SC, CL, GC	A-6	0	0-5	70-85	65-80	55-70	45-65	35-40	15-20
	46	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
107----------- Almy	0-3	Loam----------	CL	A-6	0	0	80-100	75-100	55-80	50-65	30-35	10-15
	3-22	Clay loam, loam.	CL	A-6	0	0	80-100	75-100	65-85	60-80	25-30	10-15
	22-60	Loam----------	CL-ML, CL	A-4	0	0	80-100	75-100	70-90	65-80	20-30	5-10
108----------- Amodac	0-3	Loam----------	CL	A-6	0	0	90-100	90-100	60-80	50-70	30-40	10-15
	3-11	Loam, clay loam, sandy clay loam.	CL	A-6	0	0	95-100	95-100	60-80	50-70	30-40	10-15
	11-26	Loam, clay loam, sandy clay loam.	CL	A-6	0	0	95-100	95-100	60-80	50-70	30-40	10-15
	26-60	Loam, clay loam, sandy clay loam.	CL	A-6	0	0	95-100	95-100	60-80	50-70	30-40	10-15
109*:												
Amodac-------	0-4	Fine sandy loam.	SM	A-4	0	0	90-100	90-100	60-80	40-50	25-30	NP-5
	4-15	Loam, clay loam, sandy clay loam.	CL	A-6	0	0	95-100	95-100	60-80	50-70	30-40	10-15
	15-26	Loam, clay loam, sandy clay loam.	CL	A-6	0	0	95-100	95-100	60-80	50-70	30-40	10-15
	26-60	Loam, clay loam, sandy clay loam.	CL	A-6	0	0	95-100	95-100	60-80	50-70	30-40	10-15
Keyner-------	0-2	Sandy clay loam.	CL	A-6	0	0	85-100	80-100	70-85	50-60	30-35	10-15
	2-13	Sandy clay loam, clay loam, loam.	CL	A-6	0	0	85-100	80-100	70-85	50-60	30-40	10-20
	13-23	Sandy clay loam, clay loam, loam.	CL	A-6	0	0	85-100	80-100	70-85	50-60	30-40	10-20
	23-60	Sandy loam, sandy clay loam, loam.	SC-SM, CL-ML, SC	A-4	0	0	85-100	80-100	65-80	40-55	20-25	5-10
110----------- Aquic Ustifluvents	0-60	Variable------	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments	Frag- ments	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
111*: Aquic Ustifluvents	0-60	Variable	---	---	---	---	---	---	---	---	---	---
Orpha	0-4	Sand	SP-SM, SM	A-2	0	0	100	95-100	60-70	10-20	---	NP
	4-60	Sand, loamy sand.	SM	A-2	0	0	100	95-100	60-80	15-35	---	NP
112*: Arvada	0-3	Clay loam	CL	A-6	0	0	100	90-100	85-100	70-80	30-40	15-20
	3-13	Clay, silty clay, clay loam.	CL, CH	A-7	0	0	90-100	90-100	90-100	75-95	40-65	20-35
	13-25	Clay loam, silty clay, clay.	CL, CH	A-7	0	0	90-100	90-100	90-100	75-90	40-60	15-30
	25-60	Clay loam, silty clay loam, clay.	CL	A-7	0	0	90-100	90-100	90-100	75-90	40-50	15-25
Absted	0-2	Clay loam	CL	A-6	0	0	90-100	85-100	70-90	60-80	35-40	15-20
	2-12	Clay loam, clay.	CL, CH	A-7	0	0	85-100	85-100	70-90	60-80	40-55	20-30
	12-27	Clay loam, clay.	CL, CH	A-7	0	0	85-100	85-100	70-90	60-80	40-55	20-30
	27-60	Clay loam, clay.	CL	A-6, A-7	0	0	85-100	85-100	70-90	60-80	35-50	15-25
Slickspots.												
113*: Arvada	0-3	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	90-100	85-95	70-80	20-30	5-15
	3-12	Clay, silty clay, clay loam.	CL, CH	A-7	0	0	90-100	90-100	90-100	75-95	40-65	20-35
	12-37	Clay loam, silty clay, clay.	CL, CH	A-7	0	0	90-100	90-100	90-100	75-90	40-60	15-30
	37-60	Clay loam, silty clay loam, clay.	CL	A-7	0	0	90-100	90-100	90-100	75-90	40-50	15-25
Slickspots.												
114*: Bachus	0-5	Loam	ML, CL-ML	A-4	0	0-5	80-100	80-100	70-85	50-70	<25	NP-5
	5-19	Loam, clay loam.	CL	A-6	0	0-10	80-100	80-100	75-90	60-75	25-40	10-20
	19-33	Cobbly clay loam, cobbly loam, stony clay loam.	CL	A-6	0	25-40	85-100	85-100	60-80	50-70	30-40	15-20
	33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments	Frag- ments	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
114*:												
Nathrop------	0-6	Stony loam----	CL-ML, CL	A-6, A-4	15-25	10-15	80-90	75-85	65-75	50-65	25-35	5-15
	6-36	Very stony clay loam, very stony loam, extremely stony clay loam.	GC, SC	A-2-6, A-2-7, A-6, A-7	30-50	20-30	50-75	45-70	40-60	30-50	35-45	15-20
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
115*:												
Bachus-------	0-4	Loam----------	ML, CL-ML	A-4	0	0-5	80-100	80-100	70-85	50-70	<25	NP-5
	4-16	Loam, clay loam.	CL	A-6	0	0-10	80-100	80-100	75-90	60-75	25-40	10-20
	16-22	Cobbly clay loam, cobbly loam, stony clay loam.	CL	A-6	0	25-40	85-100	85-100	60-80	50-70	30-40	15-20
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Clayburn-----	0-16	Loam----------	CL-ML, CL	A-4	0	0	90-100	85-100	75-90	50-65	20-30	5-10
	16-37	Clay loam, sandy clay loam.	CL	A-6	0	0	90-100	85-100	75-90	65-75	30-40	10-15
	37-60	Loam, sandy clay loam.	CL-ML, CL	A-4	0	0	90-100	85-100	70-80	60-70	20-30	5-10
116*:												
Bachus-------	0-4	Loam----------	ML, CL-ML	A-4	0	0-5	80-100	80-100	70-85	50-70	<25	NP-5
	4-23	Loam, clay loam.	CL	A-6	0	0-10	80-100	80-100	75-90	60-75	25-40	10-20
	23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Pagosa-------	0-15	Loam----------	CL	A-6	0	0-10	95-100	90-100	70-85	65-75	30-35	10-15
	15-23	Clay loam, cobbly clay loam.	CL	A-6, A-7	0-10	5-25	75-95	70-90	60-75	55-70	35-50	15-25
	23-43	Clay, clay loam, cobbly clay.	CL, CH	A-7	0-10	5-25	75-95	70-90	60-85	55-80	45-60	25-35
	43-51	Cobbly clay loam, stony clay loam.	CL, SC, GC	A-6, A-7	10-25	10-25	70-80	65-75	60-70	45-60	35-50	15-25
	51	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
117---------- Badland	0-60	Weathered bedrock.	---	---	0	0	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
118*:												
Badwater-----	0-6	Bouldery loam	CL-ML	A-4	25-40	5-10	85-100	85-100	60-80	50-75	25-30	5-10
	6-24	Very bouldery clay loam, very bouldery loam.	CL	A-6	45-60	5-10	85-100	85-100	70-90	60-85	30-40	10-20
	24-35	Extremely bouldery clay loam, extremely bouldery loam.	CL	A-6	70-80	5-10	85-100	85-100	70-90	60-85	30-40	10-20
	35-60	Extremely bouldery loam, extremely bouldery clay loam.	CL	A-6	70-80	5-10	85-100	85-100	65-85	55-80	30-35	10-15
Rubble land--	0-60	Fragmental material.	GP	A-1	70-80	75-90	0-10	0-5	0-5	0	---	NP
119*:												
Barnum-------	0-7	Fine sandy loam.	ML, CL-ML	A-4	0	0	85-100	85-100	70-95	50-65	20-25	NP-5
	7-60	Stratified silty clay loam to loamy sand.	CL	A-6	0	0	85-100	85-100	70-95	50-75	30-40	10-20
Redbank------	0-6	Fine sandy loam.	SM, SC-SM	A-2	0	0	75-100	75-100	55-75	25-35	<25	NP-5
	6-60	Stratified loam to loamy sand.	SM, SC-SM	A-2	0	0	75-100	75-100	65-85	25-35	<25	NP-5
120-----------	0-6	Loam----------	CL, CL-ML	A-4, A-6	0	0-5	85-100	85-100	60-80	50-60	25-35	5-15
Bateson	6-18	Clay loam, sandy clay loam.	CL	A-7, A-6	0	0-5	85-100	85-100	60-80	50-60	35-45	15-25
	18-60	Very gravelly coarse sandy loam, very gravelly sandy loam.	GM, GP-GM	A-1	0	0-15	45-55	40-50	20-35	10-20	20-25	NP-5
121-----------	0-2	Sandy loam----	SM	A-2	0	0	85-100	85-100	50-70	25-35	>25	NP-5
Bessemer	2-13	Gravelly clay loam, clay loam.	CL	A-6, A-7	0	0-5	65-100	65-100	55-85	50-75	40-50	20-25
	13-60	Very gravelly sandy clay loam.	GC	A-2	0	0-10	40-60	35-50	25-40	15-25	30-35	10-15

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
122----------- Bessemer	0-2	Gravelly clay loam.	CL	A-6	0	0-5	60-85	60-85	55-70	50-60	35-40	15-20
	2-9	Gravelly clay, clay, clay loam.	CL	A-7	0	0-5	65-100	65-100	55-70	50-60	40-50	20-25
	9-14	Gravelly clay loam.	CL	A-6, A-7	0	0-5	65-85	65-75	55-65	50-60	35-45	15-25
	14-60	Very cobbly loam, very cobbly clay loam.	GC, SC	A-6	0-5	25-35	70-80	65-75	45-60	40-50	30-40	10-15
123*:												
Bessemer-----	0-3	Clay loam-----	CL	A-6	0	0	85-100	85-100	70-85	60-80	35-40	10-20
	3-11	Gravelly clay, clay, clay loam.	CL	A-7	0	0-5	65-100	65-100	55-70	50-60	40-50	20-25
	11-60	Very cobbly loam, very cobbly clay loam.	GC, SC	A-6	0-5	25-35	70-80	65-75	45-60	40-50	30-40	10-15
Urban land.												
124----------- Blackdraw	0-2	Clay loam-----	CL	A-7	0	0	95-100	95-100	90-100	80-90	40-45	15-20
	2-7	Clay loam, silty clay loam, clay.	CL, CH	A-7	0	0	95-100	95-100	90-100	80-95	40-60	20-35
	7-60	Clay loam, silty clay loam, clay.	CL, CH	A-7	0	0	95-100	95-100	90-100	80-95	40-60	20-35
125*:												
Blackdraw----	0-1	Clay loam-----	CL	A-7	0	0	95-100	95-100	90-100	80-90	40-45	15-20
	1-12	Clay loam, silty clay loam, clay.	CL, CH	A-7	0	0	95-100	95-100	90-100	80-95	40-60	20-35
	12-60	Clay loam, silty clay loam, clay.	CL, CH	A-7	0	0	95-100	95-100	90-100	80-95	40-60	20-35
Lolite-------	0-1	Clay loam-----	CL, CH	A-7	0	0	95-100	95-100	85-100	80-95	40-60	20-35
	1-5	Clay, clay loam, silty clay.	CL, CH	A-7	0	0	95-100	95-100	85-100	80-95	40-60	20-35
	5-12	Clay, clay loam, silty clay.	CL, CH	A-7	0	0	95-100	95-100	85-100	80-95	40-60	20-35
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Gullied land.												

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
126*:												
Blazon-------	0-3	Loam----------	CL-ML, CL	A-4	0	0-5	85-100	80-100	70-90	65-75	25-30	5-10
	3-15	Loam, clay loam, sandy clay loam.	CL-ML, CL	A-4, A-6	0	0-5	85-100	80-100	70-90	55-80	25-40	5-15
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Worfman------	0-2	Loam----------	SC-SM, SC, CL-ML, CL	A-4, A-6	0	0-10	85-100	80-100	65-85	40-65	25-35	5-15
	2-11	Sandy clay loam, clay loam.	CL	A-6	0	0-10	85-100	80-100	65-85	50-75	30-40	10-20
	11-17	Sandy clay loam, clay loam, loam.	CL	A-6	0	0-10	85-100	80-100	65-85	50-70	30-35	10-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
127*:												
Blazon-------	0-3	Gravelly loam	CL-ML, CL	A-4	0	0-5	75-85	70-80	60-70	50-60	25-30	5-10
	3-14	Loam, clay loam, sandy clay loam.	CL-ML, CL	A-4, A-6	0	0-5	85-100	80-100	70-90	55-80	25-40	5-15
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Cragosen-----	0-5	Gravelly loam	SM, GM, GM-GC, SC-SM	A-4	0	0-5	65-85	60-80	40-65	35-50	<25	NP-5
	5-18	Very gravelly loam, extremely gravelly loam, very gravelly sandy loam.	GM-GC, GM, GC, GP-GM	A-2, A-4, A-1	0	0-10	30-55	25-55	20-50	10-40	<30	NP-10
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Worfman------	0-2	Loam----------	SC-SM, SC, CL-ML, CL	A-4, A-6	0	0-10	85-100	80-100	65-85	40-65	25-35	5-15
	2-6	Sandy clay loam, clay loam.	CL	A-6	0	0-10	85-100	80-100	65-85	50-75	30-40	10-20
	6-17	Sandy clay loam, clay loam, loam.	CL	A-6	0	0-10	85-100	80-100	65-85	50-70	30-35	10-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
128*:												
Boettcher----	0-2	Cobbly clay loam.	CL	A-6	0-10	15-25	80-90	75-85	70-80	60-70	30-40	10-15
	2-9	Cobbly clay loam.	CL	A-6, A-7	0-10	15-25	80-90	75-85	70-80	60-70	35-45	15-20
	9-16	Clay, cobbly clay loam.	CL, CH	A-7	0-5	0-15	90-100	85-100	80-90	70-80	40-55	20-30
	16-33	Clay----------	CL, CH	A-7	0	0	90-100	90-100	90-100	80-90	45-55	20-30
	33	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Brownsto-----	0-3	Cobbly loam---	CL-ML	A-4	0-5	20-30	80-95	75-90	60-75	50-60	25-30	5-10
	3-21	Cobbly loam---	CL-ML, CL	A-4	5-15	10-20	80-90	70-80	60-70	50-60	25-30	5-10
	21-60	Very cobbly loam.	GM-GC, GC	A-2-4, A-4	5-15	30-40	55-65	50-60	45-55	30-45	25-30	5-10
129*:												
Boettcher----	0-2	Loam----------	CL-ML, CL	A-4	0	0	85-100	80-100	70-85	60-75	25-30	5-10
	2-16	Clay loam, clay.	CL, CH	A-7	0	0	85-100	80-100	75-90	65-80	40-55	20-30
	16-35	Clay loam, clay.	CL, CH	A-7	0	0-10	85-100	80-100	75-90	65-80	40-55	20-30
	35	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Pinelli------	0-4	Loam----------	CL	A-6	0	0	95-100	95-100	85-95	60-70	30-35	10-15
	4-24	Clay loam, clay.	CH	A-7	0	0	95-100	95-100	90-100	70-85	50-65	30-40
	24-32	Clay loam, clay.	CH	A-7	0	0	95-100	95-100	90-100	70-85	50-65	30-40
	32-60	Loam, clay loam.	CL	A-6	0	0	95-100	95-100	85-95	65-75	30-40	10-20
Worfman------	0-4	Loam----------	SC-SM, SC, CL-ML, CL	A-4, A-6	0	0-10	85-100	80-100	65-85	40-65	25-35	5-15
	4-14	Sandy clay loam, clay loam.	CL	A-6	0	0-10	85-100	80-100	65-85	50-75	30-40	10-20
	14-17	Sandy clay loam, clay loam, loam.	CL	A-6	0	0-10	85-100	80-100	65-85	50-70	30-35	10-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
130*:												
Bosler-------	0-2	Sandy loam----	SM	A-4	0	0	80-100	75-100	55-85	35-50	<30	NP-5
	2-14	Sandy clay loam.	SC, SC-SM, CL-ML, CL	A-6, A-4	0	0	80-100	75-100	65-85	45-60	25-35	5-15
	14-24	Sandy clay loam, sandy loam.	CL-ML, CL, SC, SC-SM	A-4, A-6	0	0	80-100	75-100	55-85	40-60	25-35	5-15
	24-60	Very gravelly sand, very gravelly loamy sand.	GP, GP-GM	A-1	0	0	25-40	25-40	15-30	0-10	---	NP

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
130*:												
Alcova-------	0-5	Fine sandy loam.	SM	A-2, A-2-4, A-4	0	0-5	85-95	80-90	65-75	30-40	---	NP
	5-17	Sandy clay loam, gravelly sandy clay loam.	GC, SC	A-2, A-6	0	0-5	60-95	55-90	50-75	25-50	30-40	10-20
	17-30	Gravelly loam, gravelly sandy loam.	GM-GC, SC-SM	A-2, A-4	0	0-5	55-80	50-75	40-60	30-45	20-30	5-10
	30-60	Very gravelly loam, very gravelly sandy loam.	GM-GC, GM, GC	A-2, A-1-b	0	5-25	50-55	45-50	30-45	20-35	20-30	NP-10
131*:												
Bosler-------	0-3	Sandy loam----	SM	A-4	0	0	80-100	75-100	55-85	35-50	<30	NP-5
	3-16	Sandy clay loam.	SC, SC-SM, CL-ML, CL	A-6, A-4	0	0	80-100	75-100	65-85	45-60	25-35	5-15
	16-60	Very gravelly coarse sand.	GP, GP-GM	A-1	0	0	25-40	25-40	5-20	0-10	---	NP
Hiland-------	0-5	Sandy loam----	SM, SC-SM	A-2, A-4	0	0	95-100	95-100	65-75	30-40	<30	NP-10
	5-24	Sandy clay loam.	SC, CL	A-6	0	0	95-100	95-100	70-80	40-60	30-40	10-20
	24-60	Sandy loam, fine sandy loam.	SC-SM, SC	A-2, A-4	0	0	95-100	95-100	60-75	30-50	20-30	5-10
132*:												
Bowbac-------	0-3	Fine sandy loam.	SC-SM, SC, SM	A-4	0	0	90-100	90-100	75-85	40-50	<25	NP-10
	3-20	Sandy loam, sandy clay loam.	SC-SM, SC, CL-ML, CL	A-4	0	0	90-100	90-100	75-85	40-55	20-30	5-10
	20-26	Sandy clay loam, sandy loam.	SC-SM, SC, CL-ML, CL	A-4, A-6	0	0	90-100	90-100	75-85	40-55	25-35	5-15
	26-37	Sandy loam, fine sandy loam.	SC-SM, SC	A-4	0	0	90-100	90-100	75-85	35-50	20-30	5-10
	37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Hiland-------	0-2	Fine sandy loam.	SM	A-4	0	0	95-100	95-100	70-85	35-45	<25	NP-5
	2-26	Sandy clay loam.	SC, CL	A-6	0	0	95-100	95-100	70-80	40-60	30-40	10-20
	26-60	Sandy loam, fine sandy loam.	SC-SM, SC	A-2, A-4	0	0	95-100	95-100	60-75	30-50	20-30	5-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
133*:												
Bowbac-------	0-5	Loamy fine sand.	SM, SC-SM	A-2-4, A-4	0	0	90-100	90-100	75-85	30-40	<25	NP-5
	5-13	Sandy loam, sandy clay loam.	SC-SM, SC, CL-ML, CL	A-4	0	0	90-100	90-100	75-85	40-55	20-30	5-10
	13-23	Sandy clay loam, sandy loam.	SC-SM, SC, CL-ML, CL	A-4, A-6	0	0	90-100	90-100	75-85	40-55	25-35	5-15
	23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Hiland-------	0-6	Loamy sand----	SM	A-2	0	0	95-100	90-100	50-65	15-25	---	NP
	6-13	Sandy loam----	SC-SM	A-4	0	0	95-100	90-100	65-80	35-50	25-30	5-10
	13-28	Sandy clay loam.	SC, CL	A-6	0	0	95-100	90-100	70-80	40-60	30-40	10-20
	28-38	Sandy loam, sandy clay loam, fine sandy loam.	SC-SM, SC	A-4, A-6	0	0	95-100	90-100	60-75	35-50	<30	5-15
	38-60	Sandy loam, fine sandy loam.	SC-SM	A-4	0	0	95-100	90-100	60-75	35-45	<30	5-10
Worf---------	0-2	Loamy sand----	SM	A-2-4	0	0	95-100	95-100	65-80	20-30	---	NP
	2-7	Sandy loam, sandy clay loam.	SC-SM, SC, CL-ML, CL	A-4, A-6	0	0	95-100	95-100	75-85	40-60	25-35	5-15
	7-15	Sandy clay loam.	SC, CL	A-6	0	0	95-100	95-100	75-85	45-60	30-35	10-15
	15-19	Sandy clay loam, fine sandy loam.	SC-SM, SC	A-4	0	0	95-100	95-100	75-85	35-50	25-30	5-10
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
134*:												
Bowbac-------	0-4	Sandy loam----	SC-SM, SC, SM	A-4	0	0	90-100	90-100	75-85	40-50	<25	NP-10
	4-17	Sandy loam, sandy clay loam.	SC-SM, SC, CL-ML, CL	A-4	0	0	90-100	90-100	75-85	40-55	20-30	5-10
	17-22	Sandy loam, fine sandy loam.	SC-SM, SC	A-4	0	0	90-100	90-100	75-85	35-50	20-30	5-10
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Taluce-------	0-4	Sandy loam----	SM	A-4	0	0	95-100	90-100	70-85	35-45	<30	NP-5
	4-9	Sandy loam, fine sandy loam.	SM, SC-SM	A-4	0	0	95-100	90-100	70-85	35-50	<30	NP-10
	9	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
134*:												
Terro	0-3	Fine sandy loam.	SM	A-2, A-4	0	0	100	100	70-80	30-45	<25	NP-5
	3-17	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	0	100	100	70-90	30-45	20-25	NP-5
	17-34	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	0	100	100	70-90	30-40	20-25	NP-5
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
135 Bridger	0-10	Loam	CL-ML, CL	A-4	0	0	90-100	90-100	80-90	65-80	20-30	5-10
	10-26	Clay, clay loam.	CL, CH	A-7	0	0	90-100	90-100	85-95	70-85	40-55	15-30
	26-60	Clay loam	CL	A-6, A-7	0	0	90-100	90-100	85-95	70-80	35-45	15-25
136*:												
Brokenhorn	0-4	Clay loam	CL	A-6	0	0	100	100	75-90	65-85	35-40	15-20
	4-32	Clay loam, clay.	CL, CH	A-7	0	0	100	100	80-90	70-85	40-55	20-30
	32-60	Clay loam, clay.	CL, CH	A-7	0	0	100	100	80-90	70-85	40-55	20-30
Hyshot	0-2	Clay loam	CL	A-6, A-7	0	0	100	95-100	75-90	70-85	35-45	15-20
	2-11	Clay loam, clay.	CL	A-7	0	0	100	95-100	85-100	85-95	40-50	20-25
	11-23	Clay loam, clay.	CL	A-7	0	0	100	95-100	85-100	85-95	40-50	20-25
	23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
137*:												
Brownsto	0-3	Cobbly loam	CL-ML	A-4	0-5	20-30	80-95	75-90	60-75	50-60	25-30	5-10
	3-16	Gravelly loam	GM-GC, SC-SM, GC	A-4	0	0-5	55-80	50-75	40-60	35-45	25-30	5-10
	16-60	Very gravelly loam.	GM-GC, GC	A-2, A-1	0	0-5	30-60	25-50	20-40	20-30	25-30	5-10
Lupinto	0-3	Gravelly loam	SM, GM	A-4	0	0-5	60-80	55-75	40-60	35-50	<25	NP-5
	3-8	Gravelly clay loam, gravelly sandy clay loam.	CL, GC, SC	A-6	0	0-5	60-80	55-75	45-70	35-55	30-40	10-20
	8-41	Very gravelly loam.	GC, GM-GC	A-2, A-1-b	0	0-5	35-55	30-50	30-40	20-30	20-25	5-10
	41-60	Very gravelly sandy loam.	GP-GM, GM	A-1	0	0-5	35-55	30-50	20-35	10-20	---	NP
138*:												
Buffcreek	0-3	Gravelly loam	CL-ML	A-4	0	0-15	70-80	60-75	55-70	50-60	<30	5-10
	3-22	Very gravelly loam.	GM-GC, GC	A-2-4	0-5	10-20	50-65	45-60	40-55	25-35	<30	5-10
	22-60	Very cobbly loam.	GM-GC, GC	A-2-4, A-4	0-10	35-45	50-65	45-60	35-50	30-40	<30	5-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--: 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
138*:												
Redarrow-----	0-2	Loam----------	ML	A-4	0	0	95-100	95-100	85-95	75-85	25-35	NP-10
	2-18	Loam, silt loam, clay loam.	ML	A-4	0	0	75-100	75-100	70-95	60-85	25-35	NP-10
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
139*:												
Cabin--------	0-6	Loam----------	CL-ML, CL	A-4	0	0	95-100	85-100	60-80	50-70	25-30	5-10
	6-15	Sandy clay loam.	SC-SM, SC, CL-ML, CL	A-4, A-6	0	0-5	90-100	80-100	55-75	40-60	25-35	5-15
	15-22	Gravelly sandy clay loam.	SC-SM, SC, GC	A-2, A-4, A-6	0	0-5	60-80	50-75	40-60	25-45	25-35	5-15
	22-60	Very gravelly loamy sand, very gravelly sand.	GP, GP-GM	A-1	0	0-25	30-50	25-45	15-30	0-10	---	NP
Herbman------	0-5	Very cobbly sandy loam.	SM, SC-SM, GM	A-1-b, A-2-4	0-10	40-55	60-80	55-75	35-50	20-35	<30	NP-10
	5-15	Very gravelly sandy loam, very cobbly sandy loam.	SM, GM, GM-GC	A-1-b, A-2-4, A-1-a	0-10	10-45	45-65	35-55	25-35	10-25	<30	NP-10
	15	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
140*:												
Cadoma-------	0-5	Clay loam-----	CL	A-7	0	0	95-100	95-100	85-95	75-85	40-50	20-25
	5-22	Clay, silty clay, silty clay loam.	CL, CH	A-7	0	0	100	100	80-90	75-90	40-55	25-35
	22-36	Clay, clay loam, silty clay loam.	CL, CH	A-7	0	0	100	100	80-90	75-90	40-55	25-35
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Renohill-----	0-3	Clay loam-----	CL	A-7	0	0	95-100	95-100	90-100	70-85	40-50	20-30
	3-10	Clay, clay loam.	CL, CH	A-7	0	0	95-100	95-100	90-100	70-85	45-60	25-35
	10-29	Clay, clay loam.	CL, CH	A-7	0	0	95-100	95-100	90-100	70-85	45-60	25-35
	29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Samday-------	0-4	Clay loam-----	CL	A-7	0	0	100	90-100	85-95	75-85	45-50	25-30
	4-13	Clay, clay loam, silty clay.	CH	A-7	0	0	100	95-100	85-100	75-95	50-60	30-35
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
141----------- Cambria	0-4	Sandy clay loam.	CL-ML, SC-SM	A-4	0	0	95-100	95-100	70-80	40-60	25-30	5-10
	4-8	Clay loam, sandy clay loam.	CL	A-6	0	0	95-100	95-100	75-95	75-85	35-40	15-20
	8-30	Clay loam-----	CL	A-6	0	0	95-100	95-100	75-95	75-85	35-40	15-20
	30-60	Loam, clay loam.	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	75-90	70-80	25-35	5-15
142*:												
Cambria------	0-1	Very fine sandy loam.	SM, ML	A-4	0	0	95-100	95-100	70-90	45-60	25-30	NP-5
	1-8	Loam, clay loam, sandy clay loam.	CL	A-6	0	0	95-100	95-100	70-90	50-70	30-40	10-20
	8-60	Loam----------	CL-ML, CL	A-4, A-6	0	0	95-100	85-100	65-90	50-70	25-35	5-15
Zigweid------	0-3	Loam----------	CL	A-6	0	0	95-100	95-100	80-90	65-75	25-35	10-15
	3-12	Loam, clay loam.	CL	A-6	0	0	95-100	95-100	80-90	65-80	30-40	10-20
	12-60	Loam, clay loam.	CL	A-6	0	0	95-100	95-100	80-90	65-80	30-40	10-20
143*:												
Cambria------	0-2	Sandy clay loam.	CL-ML, SC-SM	A-4	0	0	95-100	95-100	70-80	40-60	25-30	5-10
	2-7	Clay loam, sandy clay loam.	CL	A-6	0	0	95-100	95-100	75-95	75-85	35-40	15-20
	7-25	Clay loam-----	CL	A-6	0	0	95-100	95-100	75-95	75-85	35-40	15-20
	25-60	Loam, clay loam.	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	75-90	70-80	25-35	5-15
Zigweid------	0-4	Clay loam-----	CL	A-6	0	0	95-100	95-100	80-90	70-80	35-40	15-20
	4-10	Loam, clay loam.	CL	A-6	0	0	95-100	95-100	80-90	65-80	30-40	10-20
	10-60	Loam, clay loam.	CL	A-6	0	0	95-100	95-100	80-90	65-80	30-40	10-20
144*:												
Castner------	0-3	Channery loam	SM	A-2, A-4, A-1-b	0-5	0-5	60-80	55-75	40-60	20-40	25-30	NP-5
	3-11	Very channery loam, very flaggy loam, very flaggy fine sandy loam.	GP-GM, GM	A-1, A-2	5-20	10-25	45-65	30-55	20-40	10-30	25-30	NP-5
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
144*:												
Chincap------	0-1	Fine sandy loam.	SM	A-4	0	0-5	90-100	90-100	70-80	35-50	---	NP
	1-9	Sandy loam, fine sandy loam.	SM	A-4	0	0-5	90-100	90-100	65-75	35-50	15-25	NP-5
	9-23	Sandy loam, fine sandy loam.	SM	A-4, A-2	0	0-5	85-95	85-95	65-75	30-45	15-25	NP-5
	23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
145*:												
Castner------	0-2	Channery loam	SM	A-2, A-4, A-1-b	0-5	0-5	60-80	55-75	40-60	20-40	25-30	NP-5
	2-14	Very channery loam, very flaggy loam, very flaggy fine sandy loam.	GP-GM, GM	A-1, A-2	5-20	10-25	45-65	30-55	20-40	10-30	25-30	NP-5
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
146-----------	0-1	Loam----------	CL	A-6	0	0	100	100	90-100	65-75	30-35	10-15
Cavegulch	1-8	Clay loam, loam, silty clay loam.	CL	A-6	0	0	100	100	90-100	80-90	30-40	10-15
	8-36	Clay loam, loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	80-90	30-40	10-15
	36-60	Clay loam, loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	80-90	30-40	10-15
147*:												
Cavegulch----	0-4	Loam----------	CL	A-6	0	0	100	100	90-100	65-75	30-35	10-15
	4-11	Clay loam, loam, silty clay loam.	CL	A-6	0	0	100	100	90-100	80-90	30-40	10-15
	11-36	Clay loam, loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	80-90	30-40	10-15
	36-60	Clay loam, loam, silty clay loam.	CL	A-6	0	0	100	100	95-100	80-90	30-40	10-15
Brokenhorn---	0-4	Clay loam-----	CL	A-6	0	0	100	100	75-90	65-85	35-40	15-20
	4-37	Clay loam, clay.	CL, CH	A-7	0	0	100	100	80-90	70-85	40-55	20-30
	37-60	Clay loam, clay.	CL, CH	A-7	0	0	100	100	80-90	70-85	40-55	20-30

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
148----------- Chalkcreek	0-4	Loam----------	ML	A-4	0	0	100	95-100	90-100	75-90	30-35	5-10
	4-11	Loam, clay loam.	CL	A-6	0	0	100	95-100	90-100	75-90	30-35	10-15
	11-60	Loam, clay loam.	CL	A-6	0	0	100	95-100	90-100	75-90	30-35	10-15
149*:												
Chipendale---	0-2	Clay loam-----	CL	A-6	0	0	95-100	95-100	80-90	70-85	35-40	15-20
	2-17	Clay loam, clay.	CL, CH	A-7	0	0	95-100	95-100	85-95	75-90	40-55	20-30
	17-60	Clay loam, clay.	CL, CH	A-7	0	0	95-100	95-100	85-95	75-90	40-55	20-30
Chipenhill---	0-1	Clay loam-----	CL, CH	A-7	0	0-5	95-100	95-100	90-100	80-90	40-55	20-30
	1-17	Clay, clay loam, silty clay.	CL, CH	A-7	0	0	95-100	95-100	90-100	80-90	40-55	20-30
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
150*:												
Chipendale---	0-1	Clay loam-----	CL	A-6	0	0	95-100	95-100	80-90	70-85	35-40	15-20
	1-30	Clay loam, clay.	CL, CH	A-7	0	0	95-100	95-100	85-95	75-90	40-55	20-30
	30-60	Clay loam, clay.	CL, CH	A-7	0	0	95-100	95-100	85-95	75-90	40-55	20-30
Razsun-------	0-3	Clay loam-----	CL	A-6, A-7	0	0	100	95-100	80-95	75-85	35-45	15-20
	3-11	Clay loam, clay.	CL	A-7	0	0	100	95-100	85-100	80-90	40-50	20-25
	11-21	Clay loam, clay.	CL	A-7	0	0	100	95-100	85-100	80-90	40-50	20-25
	21	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
151----------- Chipenhill	0-3	Gravelly clay loam.	CL, CH	A-7	0	0-5	75-80	60-75	55-70	50-60	40-55	20-30
	3-11	Clay, clay loam, silty clay.	CL, CH	A-7	0	0	95-100	95-100	90-100	80-90	40-55	20-30
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
152*:												
Chipenhill---	0-1	Clay loam-----	CL, CH	A-7	0	0-5	95-100	95-100	90-100	80-90	40-55	20-30
	1-11	Clay, clay loam, silty clay.	CL, CH	A-7	0	0	95-100	95-100	90-100	80-90	40-55	20-30
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
153*:												
Chittum------	0-2	Loam----------	CL, SC	A-2, A-6	0	0-5	90-100	80-100	65-85	30-55	25-30	10-15
	2-12	Gravelly loam, loam, sandy clay loam.	SC, CL, GC	A-6	0	0-5	70-95	55-90	55-70	35-55	25-40	10-20
	12-18	Gravelly clay loam, clay loam, sandy clay loam.	SC, CL, GC	A-6, A-2	0	0-5	70-95	55-90	55-75	30-60	30-40	10-20
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Nielsen------	0-2	Very flaggy loam.	GC, GM-GC, SC-SM, SC	A-4, A-6	20-35	15-25	60-80	55-75	45-65	35-55	25-35	5-15
	2-12	Very flaggy clay loam, very flaggy loam.	GC, SC, CL	A-6	20-35	15-25	60-80	55-75	45-65	40-60	30-40	10-20
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
154*:												
Chittum------	0-3	Loam----------	CL, SC	A-2, A-6	0	0-5	90-100	80-100	65-85	30-55	25-30	10-15
	3-9	Gravelly loam, loam, sandy clay loam.	SC, CL, GC	A-6	0	0-5	70-95	55-90	55-70	35-55	25-40	10-20
	9-14	Gravelly clay loam, clay loam, sandy clay loam.	SC, CL, GC	A-6, A-2	0	0-5	70-95	55-90	55-75	30-60	30-40	10-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Sneffels-----	0-11	Loam----------	CL, CL-ML	A-4	0	0-5	75-100	75-100	65-95	50-80	20-30	5-10
	11-27	Clay, clay loam.	CL, CH	A-6, A-7	0	0-5	75-100	75-100	70-95	60-90	35-55	15-30
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
155----------- Clarkelen	0-6	Sandy loam----	SM	A-2, A-4	0	0	95-100	90-100	60-75	30-50	<25	NP-5
	6-49	Stratified loamy sand to loam.	SM	A-2, A-4	0	0	95-100	90-100	60-75	25-45	<25	NP-5
	49-60	Very gravelly sand, very gravelly coarse sand.	GP-GM, SP-SM	A-1	0	0-5	45-60	35-50	15-30	5-10	---	NP-5
156*:												
Clayburn-----	0-11	Loam----------	CL-ML, CL	A-4	0	0	90-100	85-100	75-90	50-65	20-30	5-10
	11-39	Clay loam, sandy clay loam.	CL	A-6	0	0	90-100	85-100	75-90	65-75	30-40	10-15
	39-60	Loam, sandy clay loam.	CL-ML, CL	A-4	0	0	90-100	85-100	70-80	60-70	20-30	5-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
156*:												
Moslander----	0-8	Loam----------	CL-ML	A-4	0	0	95-100	90-100	70-80	55-65	20-30	5-10
	8-26	Clay loam, loam.	CL	A-6	0-5	0-5	95-100	90-100	70-80	65-75	30-35	10-15
	26-60	Clay loam, loam.	CL	A-6	0-5	0-5	95-100	90-100	70-80	65-75	30-35	10-15
157*:												
Coalmont-----	0-3	Loam----------	CL-ML, CL	A-4, A-6	0	0	90-100	85-100	65-85	50-70	25-35	5-15
	3-17	Clay loam, clay.	CL, CH	A-7	0	0	90-100	85-100	70-90	60-80	40-55	20-30
	17-33	Clay loam-----	CL	A-6, A-7	0	0	90-100	85-100	65-80	50-70	35-45	15-25
	33	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Milren-------	0-2	Loam----------	CL-ML	A-4	0	0	90-100	90-100	70-90	50-65	25-30	5-10
	2-19	Sandy clay, clay.	CH, CL	A-7	0	0	90-100	90-100	70-90	60-75	45-65	25-35
	19-24	Sandy clay loam, clay loam.	CL	A-6	0	0	90-100	90-100	60-80	50-60	30-35	10-15
	24-60	Loam----------	CL	A-6	0	0	90-100	90-100	65-85	55-65	30-35	10-15
Cragosen-----	0-2	Gravelly loam	SM, GM, GM-GC, SC-SM	A-4	0	0-5	65-85	60-80	40-65	35-50	<25	NP-5
	2-14	Very gravelly loam, extremely gravelly loam, very gravelly sandy loam.	GM-GC, GM, GC, GP-GM	A-2, A-4, A-1	0	0-10	30-55	25-55	20-50	10-40	<30	NP-10
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
158----------- Connerton	0-7	Loam----------	CL-ML	A-4	0	0	95-100	90-100	80-95	60-75	25-30	5-10
	7-26	Clay loam-----	CL	A-6	0	0	95-100	90-100	80-95	60-75	25-35	10-20
	26-42	Loam, clay loam.	CL	A-6	0	0	95-100	90-100	80-95	60-75	25-35	10-20
	42-60	Sandy clay loam, loam, clay loam.	CL	A-6	0	0	95-100	90-100	80-90	50-70	30-35	10-15
159----------- Copeman	0-3	Loam----------	CL-ML	A-4	0	0	95-100	90-100	85-95	60-75	25-30	5-10
	3-15	Loam----------	CL	A-6	0	0	90-100	85-100	70-90	60-75	25-35	10-15
	15-42	Gravelly loam	SC, GC	A-6	0	0	60-75	50-65	40-55	35-50	25-35	10-15
	42-60	Very gravelly loam.	GC	A-2-6	0	0	45-60	35-50	25-40	20-35	25-35	10-15

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
160----------- Crago	0-2	Gravelly loam	GC	A-2-6, A-6	0	5-15	55-70	50-65	40-55	30-50	30-35	10-15
	2-9	Very gravelly loam, very gravelly clay loam.	GC	A-2-6	0	15-30	40-55	35-50	25-50	25-35	30-40	10-20
	9-60	Very gravelly loam, very gravelly clay loam.	GC	A-2-6	0	15-35	40-55	35-50	25-50	25-35	30-40	10-20
161*:												
Crago--------	0-3	Very gravelly loam.	GC	A-2-6	0	10-25	40-60	40-60	30-50	25-35	30-35	10-15
	3-10	Very gravelly loam, very gravelly clay loam.	GC	A-2-6	0	15-30	40-55	35-50	25-50	25-35	30-40	10-20
	10-60	Very cobbly loam, very cobbly clay loam.	GC	A-6	0	30-45	60-70	50-60	45-55	35-50	30-40	10-20
Pensore------	0-2	Very cobbly loam.	GM, SM	A-4	0-15	35-50	60-80	50-70	40-50	35-50	30-35	5-10
	2-10	Very cobbly loam.	GM, SM	A-4	0-15	35-50	60-80	50-70	40-50	35-50	30-35	5-10
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
162----------- Cragosen	0-3	Gravelly loam	SM, GM, GM-GC, SC-SM	A-4	0	0-5	65-85	60-80	40-65	35-50	<25	NP-5
	3-16	Very gravelly loam, extremely gravelly loam, very gravelly sandy loam.	GM-GC, GM, GC, GP-GM	A-2, A-4, A-1	0	0-10	30-55	25-55	20-50	10-40	<30	NP-10
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
163*:												
Cragosen-----	0-4	Very gravelly sandy loam.	GM, GM-GC, GC	A-1, A-2	0	0-5	40-60	35-55	25-40	10-25	<30	NP-10
	4-12	Very gravelly loam, extremely gravelly loam, very gravelly sandy loam.	GM-GC, GM, GC, GP-GM	A-2, A-4, A-1	0	0-10	30-55	25-55	20-50	10-40	<30	NP-10
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
163*:												
Chalkcreek---	0-4	Loam----------	ML	A-4	0	0	100	95-100	90-100	75-90	30-35	5-10
	4-14	Loam, clay loam.	CL	A-6	0	0	100	95-100	90-100	75-90	30-35	10-15
	14-60	Loam, clay loam.	CL	A-6	0	0	100	95-100	90-100	75-90	30-35	10-15
164*:												
Cragosen Variant-----	0-2	Very gravelly sandy loam.	GM, SM, GP-GM, SP-SM	A-1	0	0-5	35-70	25-50	20-35	10-20	15-25	NP-5
	2-10	Very gravelly sandy loam.	GM, SM, GP-GM, SP-SM	A-1	0	0-5	35-70	25-50	20-35	10-20	15-25	NP-5
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Brownsto Variant-----	0-2	Gravelly sandy loam.	SM, GM, GM-GC	A-2, A-1	0	0-5	60-85	50-75	35-50	20-30	20-25	NP-5
	2-9	Gravelly sandy loam.	SM, GM, GM-GC	A-2, A-1	0	0-5	60-85	50-75	35-50	20-30	20-25	NP-5
	9-23	Very gravelly sandy loam.	SM, SP-SM, GM, GP-GM	A-1	0	0-5	35-70	25-50	20-35	10-20	20-25	NP-5
	23-30	Very gravelly sand, very gravelly loamy sand.	GP-GM, SP-SM, GM, SM	A-1	0	0-5	35-70	25-50	10-20	5-15	---	NP
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
165----------- Curecanti	0-8	Very stony loam.	GC, GM-GC	A-4, A-6	20-30	15-25	55-75	50-70	40-60	35-50	25-35	5-15
	8-18	Very stony clay loam, very stony sandy clay loam.	GC	A-2-6, A-6	25-35	20-25	50-70	45-65	35-55	30-50	30-40	10-20
	18-60	Very stony sandy clay loam, very stony clay loam, extremely stony sandy clay loam.	GC	A-2-6, A-6	25-40	20-30	50-70	45-65	35-55	30-50	30-35	10-15
166----------- Curecanti Variant	0-8	Very cobbly loam.	CL	A-6	0-5	30-45	65-80	60-75	55-70	50-60	30-35	10-15
	8-21	Very cobbly loam, very cobbly clay loam.	CL, GC, SC	A-6	0-5	30-50	65-80	55-70	50-65	45-55	30-40	10-20
	21-25	Clay loam-----	CL	A-6, A-7	0	0-5	85-100	85-100	65-80	60-75	35-45	15-20
	25	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
167*:												
Cushman------	0-3	Very fine sandy loam.	SM, ML	A-4	0	0	90-100	90-100	70-80	35-55	<25	NP-5
	3-13	Clay loam, loam.	CL	A-6	0	0	90-100	90-100	80-90	70-80	30-40	10-20
	13-24	Loam, clay loam.	CL	A-6	0	0	90-100	90-100	80-90	70-80	30-40	10-20
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Forkwood-----	0-3	Loam----------	CL-ML, CL	A-4	0	0	95-100	90-100	80-90	60-70	20-30	5-10
	3-22	Clay loam, loam.	CL	A-6	0	0	95-100	90-100	80-90	65-80	30-35	10-15
	22-60	Loam, clay loam.	CL	A-6	0	0	95-100	90-100	80-90	65-75	30-40	10-15
168*:												
Cushool------	0-2	Sandy loam----	SM	A-2	0	0	95-100	90-100	60-75	25-35	<25	NP-5
	2-14	Sandy clay loam.	SC, CL, SC-SM, CL-ML	A-6, A-4	0	0	95-100	90-100	75-85	45-55	25-35	5-15
	14-29	Sandy loam----	SM, SC-SM	A-4	0	0	95-100	90-100	75-85	35-50	<25	NP-5
	29	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Worfstone----	0-3	Sandy loam----	SM, SC-SM	A-2	0	0-5	90-100	80-95	50-75	20-35	<25	NP-5
	3-8	Sandy clay loam, gravelly sandy clay loam.	SC	A-2	0	0-5	75-100	55-90	40-60	20-35	30-35	10-15
	8-12	Very gravelly sandy clay loam, extremely gravelly sandy clay loam.	SC, GC, SP-SC, GP-GC	A-2	0	0-5	40-90	15-50	10-30	5-20	30-35	10-15
	12-15	Extremely gravelly sandy loam.	GP-GM, SP-SM, GP, SP	A-1	0	0-5	50-75	10-25	5-20	0-15	<25	NP-5
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
169*:												
Decross------	0-8	Loam----------	CL, CL-ML	A-6, A-4	0	0	90-100	85-100	65-90	50-75	25-35	5-15
	8-24	Clay loam, silty clay loam.	CL	A-6	0	0	75-95	75-95	70-90	60-80	30-40	10-20
	24-60	Loam, clay loam.	CL	A-6	0	0-5	80-90	75-85	65-85	50-70	30-35	10-15

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
169*:												
Woosley------	0-6	Loam----------	CL-ML, CL	A-4	0	0	80-100	75-100	70-90	55-70	25-35	5-10
	6-17	Clay loam-----	CL	A-6	0	0	80-100	75-100	70-90	60-70	30-40	10-20
	17-23	Gravelly loam, gravelly clay loam.	GM-GC, CL-ML, CL	A-2-4, A-4, A-6, A-2-6	0	0	60-80	50-75	45-70	30-55	25-35	5-15
	23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
170*:												
Delphill-----	0-8	Loam----------	CL	A-6	0	0	90-100	85-100	75-85	60-70	25-35	10-15
	8-26	Loam----------	CL	A-6	0	0	90-100	85-100	75-85	60-70	25-35	10-15
	26	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Blazon-------	0-2	Loam----------	CL-ML, CL	A-4	0	0-5	85-100	80-100	70-90	65-75	25-30	5-10
	2-17	Loam, clay loam, sandy clay loam.	CL-ML, CL	A-4, A-6	0	0-5	85-100	80-100	70-90	55-80	25-40	5-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
171*:												
Delplain-----	0-2	Very channery clay.	GC	A-2, A-6, A-7	0	0-10	45-60	35-50	35-45	25-45	35-50	15-25
	2-12	Very channery clay loam, very channery clay, extremely channery clay.	GC	A-2, A-6, A-7	0	0-10	20-55	20-45	15-40	15-40	35-50	15-25
	12	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
172*:												
Diamondville-	0-4	Fine sandy loam.	SM	A-2-4	0	0	95-100	90-100	75-85	25-35	<25	NP-5
	4-18	Clay loam, loam.	CL	A-6	0	0	95-100	90-100	85-95	70-80	30-40	10-20
	18-24	Loam----------	CL-ML, CL	A-4	0	0	95-100	90-100	85-95	60-75	25-30	5-10
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Worfman------	0-2	Loam----------	SC-SM, SC, CL-ML, CL	A-4, A-6	0	0-10	85-100	80-100	65-85	40-65	25-35	5-15
	2-9	Sandy clay loam, clay loam.	CL	A-6	0	0-10	85-100	80-100	65-85	50-75	30-40	10-20
	9-16	Sandy clay loam, clay loam, loam.	CL	A-6	0	0-10	85-100	80-100	65-85	50-70	30-35	10-15
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
173----------- Docpar	0-2	Loam----------	ML	A-4	0	0	95-100	90-100	60-80	55-75	30-35	5-10
	2-18	Loam, clay loam.	CL	A-6	0	0	95-100	90-100	60-80	55-75	30-40	10-15
	18-30	Loam, clay loam.	CL	A-6	0	0	95-100	90-100	60-80	55-75	30-40	10-15
	30-60	Stratified loam to sand.	SM	A-4	---	0-5	85-100	75-95	65-85	35-50	20-30	NP-5
174----------- Draknab	0-3	Loamy fine sand.	SM	A-2	0	0	100	95-100	50-70	20-35	---	NP
	3-60	Stratified sandy loam to sand.	SM, SP-SM	A-1, A-2, A-3	0	0-5	95-100	85-100	45-70	5-25	---	NP
175: Dune land.												
176*: Edlin--------	0-3	Fine sandy loam.	SM	A-2	0	0	90-100	75-100	55-75	25-35	20-30	NP-5
	3-15	Fine sandy loam, sandy loam.	SM	A-2	0	0	90-100	75-100	55-75	25-35	20-30	NP-5
	15-60	Fine sandy loam, sandy loam.	SM	A-2	0	0	90-100	75-100	55-75	25-35	20-30	NP-5
Rock River---	0-4	Fine sandy loam.	SC, SC-SM	A-4	0	0	95-100	85-100	70-90	35-50	<30	5-10
	4-20	Sandy clay loam.	SC, CL	A-6	0	0	80-100	75-100	70-90	40-60	25-35	10-15
	20-32	Sandy loam----	SC-SM	A-2, A-4	0	0	80-100	75-100	55-80	20-50	20-30	5-10
	32-60	Gravelly sandy loam.	SM, SC-SM	A-2-4, A-1-b	0	0-10	75-85	60-75	40-55	15-35	<30	NP-10
Bosler-------	0-2	Sandy loam----	SM	A-4	0	0	80-100	75-100	55-85	35-50	<30	NP-5
	2-10	Sandy clay loam.	SC, SC-SM, CL-ML, CL	A-6, A-4	0	0	80-100	75-100	65-85	45-60	25-35	5-15
	10-20	Sandy clay loam, sandy loam.	CL-ML, CL, SC, SC-SM	A-4, A-6	0	0	80-100	75-100	55-85	40-60	25-35	5-15
	20-60	Very gravelly sand, very gravelly loamy sand.	GP, GP-GM	A-1	0	0	25-40	25-40	15-30	0-10	---	NP
177*: Edlin--------	0-3	Sandy loam----	SM	A-2	0	0	90-100	75-100	55-75	25-35	20-30	NP-5
	3-16	Fine sandy loam, sandy loam.	SM	A-2	0	0	90-100	75-100	55-75	25-35	20-30	NP-5
	16-60	Fine sandy loam, sandy loam.	SM	A-2	0	0	90-100	75-100	55-75	25-35	20-30	NP-5

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
177*: Ryan Park----	0-2	Sandy loam----	SM, SC-SM	A-2-4, A-4	0	0	95-100	90-100	65-80	25-40	<25	NP-5
	2-12	Fine sandy loam, sandy loam.	SM, SC-SM, SC	A-2-4, A-4	0	0	95-100	90-100	65-80	30-50	20-30	NP-10
	12-36	Fine sandy loam, sandy loam.	SM, SC-SM, SC	A-2-4, A-4	0	0	95-100	90-100	65-80	25-45	20-30	NP-10
	36-60	Loamy fine sand, loamy sand.	SM	A-2-4	0	0	95-100	90-100	60-75	20-35	<20	NP
178*: Effington----	0-2	Silty clay loam.	CL	A-6	0	0	95-100	90-100	70-90	65-85	35-40	15-20
	2-18	Silty clay loam, silty clay, clay.	CL	A-7	0	0	95-100	90-100	70-90	65-85	40-50	20-30
	18-60	Loam, clay loam, silty clay loam.	CL	A-6, A-7	0	0	95-100	85-100	65-85	50-70	35-45	15-20
Uffens-------	0-4	Sandy loam----	SC-SM	A-4	0	0	100	95-100	60-80	35-50	20-25	5-10
	4-16	Clay loam, sandy clay loam, loam.	CL	A-6	0	0	100	95-100	65-85	60-75	30-40	10-20
	16-60	Loam----------	CL-ML, CL	A-4, A-6	0	0	100	95-100	65-85	60-75	25-35	5-15
179*: Enos---------	0-2	Loamy sand----	SM, SP-SM	A-2, A-1	0	0	75-100	75-100	40-60	10-20	<25	NP
	2-15	Sandy loam----	SM, SC-SM	A-2	0	0	75-100	75-100	50-65	25-35	<25	NP-5
	15-34	Loamy sand, sandy loam.	SM, SC-SM	A-2, A-1	0	0	75-100	75-100	40-60	15-25	<25	NP-5
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Wallson------	0-2	Loamy fine sand.	SM	A-2	0	0	95-100	95-100	70-80	15-30	---	NP
	2-14	Sandy loam, fine sandy loam.	SM, SC-SM	A-2, A-4	0	0	95-100	95-100	70-80	30-45	<30	NP-10
	14-48	Sandy loam, fine sandy loam.	SM, SC-SM	A-2, A-4	0	0	95-100	95-100	70-80	25-45	<30	NP-10
	48-60	Loamy sand, sandy loam.	SP-SM, SC-SM	A-2	0	0	95-100	95-100	65-80	10-30	<25	NP-5

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
180*:												
Farlow-------	0-3	Extremely cobbly loam.	GC	A-2-6	5-15	45-60	40-60	35-55	30-40	25-35	30-35	10-15
	3-14	Extremely cobbly loam, very cobbly loam.	GC	A-2-6	5-15	35-60	40-60	35-55	30-40	25-35	30-35	10-15
	14-60	Extremely cobbly loam, very cobbly loam.	GC	A-2-6	5-15	35-60	40-60	35-55	30-40	25-35	30-35	10-15
Starley------	0-7	Very cobbly loam.	GC, GM-GC	A-2, A-4, A-6	10-20	30-45	55-65	50-65	40-55	30-50	25-35	5-15
	7-9	Very cobbly loam, very cobbly clay loam.	GC, GM-GC	A-2, A-4, A-6	10-20	30-45	55-65	50-65	40-55	30-50	25-35	5-15
	9	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
181*:												
Farlow-------	0-8	Cobbly loam---	CL-ML, CL	A-4, A-6	5-15	10-15	80-90	70-80	60-70	50-65	25-35	5-15
	8-17	Cobbly loam, very cobbly loam, stony clay loam.	SC, GC	A-6	5-15	15-30	65-85	60-80	50-60	40-50	30-35	10-15
	17-50	Very cobbly loam, very stony loam, very cobbly clay loam.	GC	A-6	15-25	35-45	60-70	55-65	40-55	35-45	30-35	10-15
	50	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Starley------	0-4	Very cobbly loam.	GC, GM-GC	A-2, A-4, A-6	10-20	30-45	55-65	50-65	40-55	30-50	25-35	5-15
	4-14	Very cobbly loam, very cobbly clay loam.	GC, GM-GC	A-2, A-4, A-6	10-20	30-45	55-65	50-65	40-55	30-50	25-35	5-15
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
182*:												
Fiveoh-------	0-5	Loam----------	SC-SM, CL-ML	A-4	0	0	90-100	85-100	70-85	45-65	20-30	5-10
	5-28	Loam, fine sandy loam.	SC-SM, CL-ML	A-4	0	0	90-100	85-100	70-85	45-65	20-30	5-10
	28-60	Loam, fine sandy loam.	SC-SM, CL-ML	A-4	0	0	90-100	85-100	70-85	45-65	20-30	5-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
182*:												
Thermopolis--	0-5	Loam----------	CL, CL-ML	A-4, A-6	0	0	80-100	80-100	65-80	60-75	25-35	5-15
	5-16	Loam, channery loam.	GC, GM-GC, CL-ML, CL	A-4, A-6	0	0-10	60-100	60-100	50-80	40-75	25-35	5-15
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
183----------- Forelle	0-5	Loam----------	CL-ML	A-4	0	0	100	100	85-95	60-75	25-30	5-10
	5-20	Clay loam, loam.	CL	A-6	0	0	100	100	85-95	65-80	25-35	10-15
	20-60	Loam, clay loam.	CL-ML, CL	A-4	0	0	100	100	85-95	60-75	25-30	5-10
184*:												
Forelle------	0-3	Loam----------	CL-ML	A-4	0	0	100	100	85-95	60-75	25-30	5-10
	3-19	Clay loam, loam.	CL	A-6	0	0	100	100	85-95	65-80	25-35	10-15
	19-60	Loam, clay loam.	CL-ML, CL	A-4	0	0	100	100	85-95	60-75	25-30	5-10
Diamondville-	0-3	Fine sandy loam.	SM	A-2-4	0	0	95-100	90-100	75-85	25-35	<25	NP-5
	3-20	Clay loam, loam.	CL	A-6	0	0	95-100	90-100	85-95	70-80	30-40	10-20
	20-26	Loam----------	CL-ML, CL	A-4	0	0	95-100	90-100	85-95	60-75	25-30	5-10
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
185*:												
Forelle------	0-3	Loam----------	CL-ML	A-4	0	0	100	100	85-95	60-75	25-30	5-10
	3-13	Clay loam, loam.	CL	A-6	0	0	100	100	85-95	65-80	25-35	10-15
	13-60	Loam, clay loam.	CL-ML, CL	A-4	0	0	100	100	85-95	60-75	25-30	5-10
Lupinto------	0-3	Gravelly loam	SC-SM, CL-ML, GM-GC	A-4	0	0-10	70-85	60-75	40-60	35-55	25-30	5-10
	3-10	Gravelly clay loam.	CL	A-6	0	0-10	70-85	60-75	60-70	50-60	35-40	15-20
	10-60	Very gravelly sandy clay loam, very gravelly loam.	GC	A-2	0	10-20	50-60	40-55	25-50	20-35	30-35	10-15
186*:												
Forkwood-----	0-7	Loam----------	CL-ML, CL	A-4	0	0	95-100	90-100	80-90	60-70	20-30	5-10
	7-24	Clay loam, loam.	CL	A-6	0	0	95-100	90-100	80-90	65-80	30-35	10-15
	24-60	Loam, clay loam.	CL	A-6	0	0	95-100	90-100	80-90	65-75	30-40	10-15

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
186*:												
Keyner--------	0-3	Loam----------	CL, CL-ML	A-4, A-6	0	0	85-100	80-100	70-85	55-75	25-35	5-15
	3-14	Sandy clay loam, clay loam, loam.	CL	A-6	0	0	85-100	80-100	70-85	50-60	30-40	10-20
	14-23	Sandy clay loam, clay loam, loam.	CL	A-6	0	0	85-100	80-100	70-85	50-60	30-40	10-20
	23-60	Sandy loam, sandy clay loam, loam.	SC-SM, CL-ML, SC	A-4	0	0	85-100	80-100	65-80	40-55	20-25	5-10
187*:												
Forkwood-----	0-2	Loam----------	CL-ML, CL	A-4	0	0	95-100	90-100	80-90	60-70	20-30	5-10
	2-13	Clay loam, loam.	CL	A-6	0	0	95-100	90-100	80-90	65-80	30-35	10-15
	13-60	Loam, clay loam.	CL	A-6	0	0	95-100	90-100	80-90	65-75	30-40	10-15
Ulm----------	0-2	Clay loam-----	CL	A-6	0	0	95-100	95-100	80-100	70-80	35-40	15-20
	2-16	Clay loam, clay.	CL, CH	A-7	0	0	95-100	95-100	85-100	70-80	45-60	25-35
	16-60	Clay loam, clay.	CL, CH	A-7	0	0	95-100	95-100	85-100	65-80	40-55	20-30
188*:												
Forkwood-----	0-4	Fine sandy loam.	SM, ML	A-4	0	0	95-100	90-100	75-90	45-55	<25	NP-5
	4-22	Clay loam, loam.	CL	A-6	0	0	95-100	90-100	80-90	65-80	30-35	10-15
	22-60	Loam, clay loam.	CL	A-6	0	0	95-100	90-100	80-90	65-75	30-40	10-15
Zigweid------	0-3	Loam----------	CL	A-6	0	0	95-100	95-100	80-90	65-75	25-35	10-15
	3-19	Loam, clay loam.	CL	A-6	0	0	95-100	95-100	80-90	65-80	30-40	10-20
	19-60	Loam, clay loam.	CL	A-6	0	0	95-100	95-100	80-90	65-80	30-40	10-20
189*:												
Gateridge----	0-5	Fine sandy loam.	SC-SM	A-4	0-5	0-5	85-100	80-100	65-75	35-50	20-30	5-10
	5-14	Sandy clay loam.	SC, CL	A-6	0-5	0-5	85-100	80-100	65-80	45-60	25-35	10-15
	14-19	Clay----------	CL, CH	A-7	0-5	0-5	85-100	80-100	70-90	65-85	45-60	25-35
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Taluce Variant-----	0-5	Fine sandy loam.	SM	A-2	0-5	0-5	95-100	85-100	70-85	20-35	<25	NP-5
	5-15	Fine sandy loam.	SM	A-2	0-5	0-5	95-100	85-100	70-85	20-35	<25	NP-5
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
190----------- Griffy	0-2	Sandy loam----	SM, SC-SM	A-2, A-4	0	0	80-100	80-100	60-70	30-40	<20	NP-5
	2-18	Sandy clay loam.	SC-SM, SC, CL-ML, CL	A-4, A-6	0	0	80-100	80-100	50-70	40-60	25-35	5-15
	18-32	Fine sandy loam, sandy loam.	SM, SC-SM	A-2-4, A-4	0	0	80-100	80-100	60-75	25-50	<20	NP-5
	32-60	Sandy loam, loamy sand.	SM	A-2	0	0	75-100	75-100	60-75	15-25	---	NP
191*: Griffy-------	0-2	Fine sandy loam.	SM, SC-SM	A-2, A-4	0	0	80-100	80-100	60-70	30-40	<20	NP-5
	2-21	Sandy clay loam.	SC-SM, SC, CL-ML, CL	A-4, A-6	0	0	80-100	80-100	50-70	40-60	25-35	5-15
	21-32	Fine sandy loam, sandy loam.	SM, SC-SM	A-2-4, A-4	0	0	80-100	80-100	60-75	25-50	<20	NP-5
	32-60	Sandy loam, loamy sand.	SM	A-2	0	0	75-100	75-100	60-75	15-25	---	NP
Emblem-------	0-3	Fine sandy loam.	SC-SM	A-2, A-4	0	0	85-100	75-100	60-80	30-50	25-30	5-10
	3-26	Loam, sandy clay loam, gravelly sandy clay loam.	SC, CL	A-6	0	0-5	70-95	60-90	50-75	35-60	30-35	10-15
	26-60	Very gravelly loamy sand, very gravelly sand, extremely gravelly loamy sand.	GP, GP-GM, SP, SP-SM	A-1	0	0-15	35-60	25-45	15-30	0-10	---	NP
192*: Grimstone----	0-4	Loam----------	CL-ML, CL	A-4	0	0-5	90-100	90-100	75-90	60-70	25-30	5-10
	4-16	Loam----------	CL-ML, CL	A-4	0	0-5	90-100	90-100	75-90	60-70	25-30	5-10
	16-26	Clay loam, gravelly clay loam.	CL	A-6, A-7	0	0-10	80-100	75-100	70-90	65-75	35-45	15-20
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Grimstone Variant-----	0-1	Loam----------	CL-ML	A-4	0	0-5	90-100	80-95	70-80	60-70	25-30	5-10
	1-16	Very cobbly loam, very cobbly clay loam.	GC, SC	A-6	0-10	30-50	60-75	50-65	40-55	35-45	30-40	10-20
	16-36	Extremely cobbly sandy clay loam, extremely cobbly clay loam.	GC	A-2-6	0-10	55-70	30-60	20-50	15-40	10-35	30-40	10-20
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
193-----------	0-6	Loam----------	CL	A-6	0	0	95-100	95-100	80-90	60-75	30-35	10-15
Haverdad	6-60	Stratified sandy loam to clay loam.	CL	A-6	0	0	95-100	95-100	80-90	60-75	30-40	10-20
194*:												
Haverdad-----	0-3	Loam----------	CL	A-6	0	0	95-100	95-100	80-90	60-75	30-35	10-15
	3-60	Stratified sandy loam to clay loam.	CL	A-6	0	0	95-100	95-100	80-90	60-75	30-40	10-20
Clarkelen----	0-6	Fine sandy loam.	SM, SC-SM, ML, CL-ML	A-4	0	0	100	95-100	70-80	45-55	20-25	NP-5
	6-60	Stratified loamy sand to loam.	SM, SC-SM, ML, CL-ML	A-4	0	0	100	95-100	50-60	35-55	---	NP-5
195*:												
Haverdad-----	0-2	Loam----------	CL	A-6	0	0	95-100	95-100	80-90	60-75	30-35	10-15
	2-60	Stratified sandy loam to clay loam.	CL	A-6	0	0	95-100	95-100	80-90	60-75	30-40	10-20
Clarkelen----	0-2	Sandy loam----	SM	A-4, A-2-4	0	0	100	95-100	65-80	30-50	<25	NP-5
	2-60	Stratified sandy loam to loam.	SM	A-2, A-4	0	0	100	95-100	65-80	25-45	<25	NP-5
196-----------	0-4	Fine sandy loam.	SM, SC-SM	A-4	0	0	95-100	90-100	70-90	35-50	<25	NP-5
Havermom	4-60	Stratified fine sandy loam to silty clay loam.	CL-ML, CL	A-4, A-6	0	0	95-100	90-100	65-90	55-70	25-35	5-15
197-----------	0-5	Loamy sand----	SM	A-2	0	0	100	95-100	55-70	20-30	---	NP
Hawkstone	5-60	Sandy loam, coarse sandy loam.	SM, SC-SM	A-2	0	0	100	95-100	50-70	20-35	20-25	NP-5
198*:												
Hazton-------	0-3	Gravelly sandy loam.	SC-SM	A-2	0	0	80-85	70-75	50-55	25-30	25-30	5-10
	3-11	Gravelly coarse sandy loam, gravelly sandy loam.	GM, SM	A-1, A-2	0	0-5	50-100	50-75	30-60	15-30	<25	NP-5
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
199----------- Hiland	0-7	Loamy sand----	SM	A-2	0	0	95-100	95-100	50-65	15-25	<25	NP
	7-25	Sandy clay loam.	SC, CL	A-6	0	0	95-100	95-100	70-80	40-60	30-40	10-20
	25-42	Sandy loam, fine sandy loam.	SC-SM, SC	A-2, A-4	0	0	95-100	95-100	60-75	30-50	20-30	5-10
	42-60	Loamy sand, sandy loam.	SM, SC-SM	A-2	0	0	95-100	95-100	50-65	15-30	<25	NP-5
200----------- Hiland	0-2	Loamy sand----	SM	A-2	0	0	95-100	90-100	50-60	15-25	---	NP
	2-7	Sandy loam----	SM	A-2, A-4	0	0	95-100	90-100	50-75	25-40	<25	NP-5
	7-22	Sandy clay loam.	SC, CL	A-6	0	0	95-100	90-100	60-80	40-60	30-40	10-15
	22-33	Loamy sand, sandy loam.	SM	A-2	0	0	95-100	90-100	50-60	20-30	<25	NP-5
	33-60	Gravelly loamy sand, gravelly sandy loam.	SM, GM	A-1	0	0	60-75	55-75	35-50	15-25	---	NP
201----------- Hiland	0-7	Sandy loam----	SM, SC-SM	A-2, A-4	0	0	95-100	95-100	65-75	30-40	<30	NP-10
	7-22	Sandy clay loam.	SC, CL	A-6	0	0	95-100	95-100	70-80	40-60	30-40	10-20
	22-27	Sandy loam, fine sandy loam.	SC-SM, SC	A-2, A-4	0	0	95-100	95-100	60-75	30-50	20-30	5-10
	27-60	Loamy sand, sandy loam.	SM, SC-SM	A-2	0	0	95-100	95-100	50-65	15-30	<25	NP-5
202*:												
Inchau-------	0-4	Loam----------	CL-ML, CL	A-4, A-6	0	0	75-100	75-100	70-90	50-70	25-35	5-15
	4-21	Clay loam, loam, gravelly clay loam.	CL, SC	A-6, A-7	0	0	70-95	65-90	55-75	45-70	30-45	10-25
	21-30	Loam, gravelly clay loam, clay loam.	CL, SC	A-6	0	0-10	70-95	65-90	55-75	45-65	30-40	10-20
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Clayburn-----	0-10	Loam----------	CL-ML, CL	A-4	0	0	90-100	85-100	75-90	50-65	20-30	5-10
	10-30	Clay loam, sandy clay loam.	CL	A-6	0	0	90-100	85-100	75-90	65-75	30-40	10-15
	30-60	Loam, sandy clay loam.	CL-ML, CL	A-4	0	0	90-100	85-100	70-80	60-70	20-30	5-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
202*:												
Chittum------	0-4	Fine sandy loam.	ML, CL-ML	A-4	0	0-5	80-100	80-100	65-85	50-70	---	NP-5
	4-12	Gravelly loam, loam, sandy clay loam.	SC, CL, GC	A-6	0	0-5	70-95	55-90	55-70	35-55	25-40	10-20
	12-19	Gravelly clay loam, clay loam, sandy clay loam.	SC, CL, GC	A-6, A-2	0	0-5	70-95	55-90	55-75	30-60	30-40	10-20
	19	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
203*:												
Inchau-------	0-10	Loam----------	CL-ML, CL	A-4, A-6	0	0	75-100	75-100	70-90	50-70	25-35	5-15
	10-26	Clay loam, loam, gravelly clay loam.	CL, SC	A-6, A-7	0	0	70-95	65-90	55-75	45-70	30-45	10-25
	26-32	Loam, gravelly clay loam, clay loam.	CL, SC	A-6	0	0-10	70-95	65-90	55-75	45-65	30-40	10-20
	32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Farlow-------	0-8	Gravelly loam	CL, GC, SC, CL-ML	A-6, A-4	0	5-10	70-80	65-75	55-70	40-55	25-35	5-15
	8-55	Very gravelly clay loam, very gravelly loam.	GC	A-2	0	5-10	40-55	35-50	25-40	25-35	25-35	10-15
	55	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
204----------- Irson	0-6	Very gravelly loam.	SC-SM	A-2, A-1	0-10	10-20	65-85	45-60	30-50	20-35	25-35	5-10
	6-16	Very gravelly sandy clay loam, very channery sandy clay loam.	GC, SC	A-2	0-10	5-25	35-65	30-60	20-40	20-35	30-35	10-15
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
205*:												
Irson--------	0-10	Very channery sandy clay loam.	SC-SM	A-2, A-1	0-10	10-20	65-85	45-60	30-50	20-35	25-35	5-10
	10-14	Very gravelly sandy clay loam, very channery sandy clay loam.	GC, SC	A-2	0-10	5-25	35-65	30-60	20-40	20-35	30-35	10-15
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
205*:												
Kezar--------	0-4	Gravelly sandy loam.	SC-SM, SM	A-2, A-4	0	0	70-100	60-90	40-65	25-40	20-30	NP-10
	4-21	Gravelly sandy clay loam, sandy clay loam.	SC	A-2, A-6, A-7	0	0	70-90	60-85	40-60	30-50	30-45	10-20
	21-27	Gravelly sandy clay loam.	SC	A-2, A-6	0	0	65-90	50-75	35-55	25-45	30-40	10-15
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
206*:												
Irson--------	0-12	Extremely cobbly sandy clay loam.	GC	A-2	0-25	50-65	45-55	40-50	30-40	20-30	30-35	10-15
	12-18	Very cobbly sandy clay loam, extremely cobbly sandy clay loam.	SC, GC	A-2	0-20	50-65	45-65	40-60	30-40	20-35	30-35	10-15
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Sebud--------	0-14	Very stony loam.	CL, GC, SC	A-6	30-40	20-30	70-85	65-80	55-70	40-60	30-40	10-15
	14-60	Very stony loam.	CL, GC, SC	A-6	30-40	20-30	70-85	65-80	55-70	40-60	30-40	10-15
207*:												
Keeline------	0-3	Fine sandy loam.	SM, SC-SM	A-2, A-4	0	0	100	95-100	55-75	25-40	20-25	NP-5
	3-60	Sandy loam, fine sandy loam.	SM, SC-SM, SC	A-2, A-4	0	0	100	95-100	60-85	25-50	20-30	NP-10
Taluce-------	0-4	Fine sandy loam.	SM	A-4	0	0	95-100	90-100	75-85	35-50	<30	NP-5
	4-14	Sandy loam, fine sandy loam.	SM, SC-SM	A-4	0	0	95-100	90-100	70-85	35-50	<30	NP-10
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments	Frag- ments	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
208----------- Keyner	0-3	Sandy clay loam.	CL	A-6	0	0	85-100	80-100	70-85	50-60	30-35	10-15
	3-15	Sandy clay loam, clay loam, loam.	CL	A-6	0	0	85-100	80-100	70-85	50-60	30-40	10-20
	15-25	Sandy clay loam, clay loam, loam.	CL	A-6	0	0	85-100	80-100	70-85	50-60	30-40	10-20
	25-60	Sandy loam, sandy clay loam, loam.	SC-SM, CL-ML, SC	A-4	0	0	85-100	80-100	65-80	40-55	20-25	5-10
209*: Keyner-------	0-1	Sandy loam----	SM	A-2	0	0	85-100	80-100	65-75	25-35	---	NP
	1-12	Sandy clay loam, clay loam, loam.	CL	A-6	0	0	85-100	80-100	70-85	50-60	30-40	10-20
	12-19	Sandy clay loam, clay loam, loam.	CL	A-6	0	0	85-100	80-100	70-85	50-60	30-40	10-20
	19-60	Sandy loam, sandy clay loam, loam.	SC-SM, CL-ML, SC	A-4	0	0	85-100	80-100	65-80	40-55	20-25	5-10
Absted-------	0-3	Sandy clay loam.	CL	A-6	0	0	90-100	85-100	70-90	50-70	30-35	10-15
	3-14	Clay loam, clay.	CL, CH	A-7	0	0	85-100	85-100	70-90	60-80	40-55	20-30
	14-22	Clay loam, clay.	CL, CH	A-7	0	0	85-100	85-100	70-90	60-80	40-55	20-30
	22-60	Clay loam, clay.	CL	A-6, A-7	0	0	85-100	85-100	70-90	60-80	35-50	15-25
Slickspots.												
210*: Keyner-------	0-4	Sandy loam----	SM	A-2	0	0	85-100	80-100	65-75	25-35	---	NP
	4-17	Sandy clay loam, clay loam, loam.	CL	A-6	0	0	85-100	80-100	70-85	50-60	30-40	10-20
	17-24	Sandy clay loam, clay loam, loam.	CL	A-6	0	0	85-100	80-100	70-85	50-60	30-40	10-20
	24-60	Sandy loam, sandy clay loam, loam.	SC-SM, CL-ML, SC	A-4	0	0	85-100	80-100	65-80	40-55	20-25	5-10
Hiland-------	0-2	Sandy loam----	SM, SC-SM	A-2, A-4	0	0	95-100	95-100	65-75	30-40	<30	NP-10
	2-14	Sandy clay loam.	SC, CL	A-6	0	0	95-100	95-100	70-80	40-60	30-40	10-20
	14-36	Sandy loam, fine sandy loam.	SC-SM, SC	A-2, A-4	0	0	95-100	95-100	60-75	30-50	20-30	5-10
	36-60	Loamy sand, sandy loam.	SM, SC-SM	A-2	0	0	95-100	95-100	50-65	15-30	<25	NP-5

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments	Frag- ments	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
211*:												
Kezar	0-3	Loam	CL, CL-ML	A-4, A-6	0	0	90-100	80-90	55-65	50-60	25-35	5-15
	3-15	Gravelly sandy clay loam, sandy clay loam.	SC	A-2, A-6, A-7	0	0	70-90	60-85	40-60	30-50	30-45	10-20
	15-24	Gravelly sandy clay loam.	SC	A-2, A-6	0	0	65-90	50-75	35-55	25-45	30-40	10-15
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Irson	0-7	Very gravelly sandy clay loam.	SC-SM	A-2, A-1	0-10	10-20	65-85	45-60	30-50	20-35	25-35	5-10
	7-11	Very cobbly sandy clay loam.	SC, GC	A-2	0-20	35-55	60-85	55-75	30-50	15-30	30-35	10-15
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Clayburn	0-5	Sandy loam	SM, SC-SM	A-2-4, A-4	0	0	90-100	85-95	60-70	30-45	20-30	NP-10
	5-34	Sandy clay loam, gravelly sandy clay loam.	SC, CL	A-2-6, A-6, A-7	0	0-5	80-95	70-90	55-70	30-55	30-45	10-20
	34-60	Gravelly sandy clay loam, sandy loam.	SC, SC-SM	A-2-4, A-4, A-2-6	0	0-10	75-90	60-80	45-60	25-40	25-35	5-15
212 Lander	0-12	Loam	ML	A-4	0	0	95-100	95-100	80-95	50-60	20-30	NP-5
	12-36	Loam, clay loam, sandy clay loam.	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	80-95	60-70	25-40	5-15
	36-60	Gravelly sandy clay loam, sandy clay loam.	GC, SC, SC-SM, GM-GC	A-6, A-4, A-2	0	0-10	60-80	50-75	35-50	25-45	25-35	5-15
213*:												
Leavitt	0-3	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	80-90	70-80	25-35	5-15
	3-38	Clay loam, loam.	CL	A-6, A-7	0	0	95-100	95-100	80-90	70-80	30-45	10-20
	38-60	Loam	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	80-90	70-80	25-35	5-15
Coutis	0-29	Fine sandy loam.	SM, SC-SM	A-4	0	0-5	80-100	80-100	70-90	40-50	<30	NP-10
	29-60	Fine sandy loam, sandy loam.	SM, SC-SM, CL-ML, ML	A-4	0	0	90-100	85-100	70-90	40-55	<30	NP-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
214*:												
Lolite-------	0-2	Clay----------	CL, CH	A-7	0	0	95-100	95-100	85-100	80-95	40-60	20-35
	2-6	Clay, clay loam, silty clay.	CL, CH	A-7	0	0	95-100	95-100	85-100	80-95	40-60	20-35
	6-10	Clay, clay loam, silty clay.	CL, CH	A-7	0	0	95-100	95-100	85-100	80-95	40-60	20-35
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
215*:												
Lolite-------	0-2	Clay----------	CL, CH	A-7	0	0	95-100	95-100	85-100	80-95	40-60	20-35
	2-12	Clay, clay loam, silty clay.	CL, CH	A-7	0	0	95-100	95-100	85-100	80-95	40-60	20-35
	12-15	Clay, clay loam, silty clay.	CL, CH	A-7	0	0	95-100	95-100	85-100	80-95	40-60	20-35
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
216----------- Lonebear	0-1	Clay loam-----	CL, CH	A-7	0	0	95-100	95-100	80-95	75-90	40-55	20-30
	1-12	Clay loam, clay, silty clay.	CL, CH	A-7	0	0	100	95-100	85-100	80-95	40-55	20-30
	12-26	Clay loam, clay, silty clay.	CL, CH	A-7	0	0	100	95-100	85-100	80-95	40-55	20-30
	26-60	Clay loam, clay, silty clay.	CL, CH	A-7	0	0	100	95-100	85-100	80-95	40-55	20-30
217*:												
Lupinto------	0-2	Gravelly loam	SC-SM, CL-ML, GM-GC	A-4	0	0-10	70-85	60-75	40-60	35-55	25-30	5-10
	2-5	Gravelly clay loam.	CL	A-6	0	0-10	70-85	60-75	60-70	50-60	35-40	15-20
	5-48	Very gravelly sandy clay loam, very gravelly loam.	GC	A-2	0	10-20	50-60	40-55	25-50	20-35	30-35	10-15
	48	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments	Frag- ments	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
217*:												
Alcova-------	0-4	Fine sandy loam.	SM	A-2-4	0	0	95-100	95-100	75-85	30-40	<25	NP-5
	4-16	Sandy clay loam, gravelly sandy clay loam.	SC	A-6, A-2-6	0	0-5	70-95	65-90	50-75	30-50	30-40	10-20
	16-30	Gravelly loam, gravelly sandy loam.	GM-GC, SC-SM	A-4, A-2-4	0	0-5	55-80	50-75	35-55	15-40	20-30	5-10
	30-60	Very gravelly sand, very gravelly coarse sand.	GP-GM, GP, SP-SM, SP	A-1	0	5-25	50-55	45-50	15-35	0-10	---	NP
218----------- Lupinto Family	0-2	Gravelly loam, very cobbly sandy loam.	GM, GM-GC, GC, SM	A-1, A-2, A-4, A-6	0-5	10-40	35-90	25-85	15-65	10-50	20-35	NP-15
	2-6	Gravelly clay loam, very gravelly sandy clay loam, very cobbly sandy loam.	SC-SM, SC, GC, GM-GC	A-1, A-2, A-4, A-6	0-15	10-40	35-85	25-75	15-60	10-45	25-40	5-20
	6-22	Very gravelly loam, very cobbly sandy clay loam, extremely gravelly sandy loam.	GM, GM-GC, GC, SC-SM	A-1, A-2	0-15	20-50	35-70	25-60	15-50	10-35	20-35	NP-15
	22-60	Very gravelly loam, extremely cobbly sandy loam, very gravelly sand.	SM, SC, SC-SM, SP-SM	A-1, A-2	0-15	20-60	35-70	25-60	15-60	0-30	20-35	NP-15
219*:												
McFadden-----	0-4	Fine sandy loam.	ML, SM, SC-SM, CL-ML	A-4	0	0	90-100	90-100	65-80	45-60	<25	NP-5
	4-18	Sandy loam, fine sandy loam.	SM, SC-SM, CL-ML	A-4	0	0	90-100	90-100	65-80	45-60	<25	NP-5
	18-60	Sandy loam, fine sandy loam.	SM, SC-SM, CL-ML	A-4	0	0	90-100	90-100	65-80	45-60	<25	NP-5

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
219*:												
Edlin--------	0-2	Sandy loam----	SM	A-2	0	0	90-100	75-100	55-75	25-35	20-30	NP-5
	2-11	Fine sandy loam, sandy loam.	SM	A-2	0	0	90-100	75-100	55-75	25-35	20-30	NP-5
	11-60	Fine sandy loam, sandy loam.	SM	A-2	0	0	90-100	75-100	55-75	25-35	20-30	NP-5
Blackhall----	0-2	Sandy loam----	SM	A-4, A-2-4	0	0-5	90-100	90-100	65-80	30-40	<25	NP-5
	2-14	Sandy loam, fine sandy loam.	SM	A-4, A-2-4	0	0-5	90-100	85-100	55-85	30-45	<20	NP-5
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
220*:												
Middlewood---	0-5	Clay loam-----	CL	A-6	0	0	90-100	85-100	75-90	65-75	35-40	15-20
	5-18	Clay, clay loam.	CH	A-7	0	0	90-100	85-100	75-100	65-85	50-65	30-40
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Kather-------	0-3	Clay loam-----	CL, CH	A-6, A-7	0	0	80-100	75-100	70-95	55-75	30-60	15-30
	3-24	Clay, clay loam.	CH, CL	A-7	0	0	80-100	75-100	70-100	60-90	40-70	20-40
	24	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
221*:												
Milren-------	0-3	Sandy loam----	SM	A-2	0	0	100	100	70-90	25-35	---	NP
	3-14	Sandy clay----	CH, CL	A-7	0	0	100	100	70-90	60-70	45-65	25-35
	14-19	Sandy clay loam.	CL	A-6	0	0	100	100	60-80	50-60	30-35	10-15
	19-27	Loam----------	CL	A-6	0	0	100	100	65-85	55-65	30-35	10-15
	27-60	Fine sandy loam.	SM	A-2	0	0	100	100	75-90	25-35	---	NP
Bosler-------	0-2	Sandy loam----	SM	A-4	0	0	80-100	75-100	55-85	35-50	<30	NP-5
	2-22	Sandy clay loam.	SC, SC-SM, CL-ML, CL	A-6, A-4	0	0	80-100	75-100	65-85	45-60	25-35	5-15
	22-60	Very gravelly sand, very gravelly loamy sand.	GP, GP-GM	A-1	0	0	25-40	25-40	15-30	0-10	---	NP
Rock River---	0-3	Sandy loam----	SM, SC-SM	A-2-4, A-4	0	0	90-100	85-100	60-80	30-45	<30	NP-10
	3-22	Sandy clay loam.	SC, CL	A-6	0	0	90-100	85-100	75-85	45-60	25-35	10-15
	22-60	Fine sandy loam, sandy loam, sandy clay loam.	SC-SM, SC, CL, CL-ML	A-4	0	0	90-100	85-100	70-85	40-55	20-30	5-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
222*:												
Mudray-------	0-2	Silty clay loam.	CL	A-6, A-7	0	0	95-100	95-100	95-100	85-95	35-50	15-25
	2-12	Silty clay----	CH	A-7	0	0	95-100	95-100	95-100	85-95	50-60	25-35
	12-18	Silty clay loam, silty clay.	CH, CL	A-7	0	0	95-100	95-100	95-100	85-95	40-55	20-30
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Bributte-----	0-1	Silty clay loam.	CL	A-7	0	0	75-100	75-100	70-95	60-80	40-50	20-35
	1-17	Clay, silty clay.	CH	A-7	0	0	75-100	75-100	70-95	65-85	55-65	20-35
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Birdsley-----	0-1	Loam----------	CL, CL-ML	A-4	0	0	95-100	95-100	85-95	70-85	20-30	5-10
	1-18	Loam, clay loam.	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	85-95	70-85	30-40	5-15
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
223*:												
Nathrop------	0-4	Very stony loam.	GM-GC, GC, SC-SM	A-2-4, A-2-6, A-4	25-40	10-25	55-80	50-75	40-65	30-50	25-35	5-15
	4-18	Very stony clay loam, very stony loam, extremely stony clay loam.	GC, SC	A-2-6, A-2-7, A-6, A-7	30-50	20-30	50-75	45-70	40-60	30-50	35-45	15-20
	18-32	Very stony clay loam, very stony loam, extremely stony loam.	GC, SC	A-2-6, A-6	30-50	20-30	50-75	45-70	40-60	30-50	30-40	10-20
	32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Starley------	0-4	Cobbly loam---	CL, CL-ML, SC, SC-SM	A-4, A-6	5-10	10-25	75-95	70-90	60-80	45-70	25-35	5-15
	4-13	Very cobbly loam, very cobbly clay loam.	GC, GM-GC	A-2, A-4, A-6	10-20	30-45	55-65	50-65	40-55	30-50	25-35	5-15
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
224*:												
Neldore------	0-2	Clay----------	CH	A-7	0	0-10	95-100	90-100	75-95	70-90	50-65	30-40
	2-16	Clay, silty clay.	CH	A-7	0	0-5	85-100	80-100	65-95	60-90	50-65	30-40
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
224*:												
Moyerson-----	0-2	Clay loam-----	CL	A-6	0	0-5	90-100	85-100	70-90	60-80	35-40	15-20
	2-13	Clay, clay loam.	CL, CH	A-7	0	0-10	95-100	90-100	85-95	80-90	45-65	20-35
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
225-----------	0-9	Loam----------	CL	A-6	0	0	100	95-100	65-85	60-70	30-35	10-15
Nunnston	9-27	Clay, clay loam.	CL, CH	A-7	0	0	100	95-100	85-100	85-95	45-55	25-35
	27-60	Clay loam-----	CL	A-7	0	0	100	95-100	85-95	65-85	40-50	20-30
226*:												
Oceanet------	0-2	Sandy loam----	SM, SC-SM	A-2, A-1	0	0-5	75-100	75-100	45-65	20-35	15-20	NP-5
	2-14	Fine sandy loam, sandy loam.	SM, SC-SM	A-2-4, A-4	0	0-5	85-100	75-100	50-70	30-45	15-20	NP-5
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Persayo------	0-1	Loam----------	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	85-95	60-75	25-35	5-15
	1-16	Sandy clay loam, loam.	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	70-85	50-70	25-35	5-15
	16	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
227*:												
Orella-------	0-2	Clay loam-----	CH, CL	A-7	0	0	100	100	90-100	70-80	40-55	25-35
	2-10	Clay, clay loam, silty clay loam.	CH	A-7	0	0	100	100	90-100	75-95	50-65	30-40
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Cadoma-------	0-4	Clay loam-----	CL	A-7	0	0	95-100	95-100	85-95	75-85	40-50	20-25
	4-14	Clay, silty clay, silty clay loam.	CL, CH	A-7	0	0	100	100	80-90	75-90	40-55	25-35
	14-28	Clay, clay loam, silty clay loam.	CL, CH	A-7	0	0	100	100	80-90	75-90	40-55	25-35
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Petrie-------	0-5	Clay loam-----	CL	A-6	0	0	80-100	75-100	75-100	60-80	35-40	15-20
	5-60	Clay loam, clay, silty clay.	CL, CH	A-7	0	0	80-100	75-100	75-100	60-95	40-55	20-35

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments	Frag- ments	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
228*:												
Orella-------	0-2	Silty clay loam.	CH, CL	A-7	0	0	100	100	95-100	80-95	40-55	25-35
	2-12	Clay, clay loam, silty clay loam.	CH	A-7	0	0	100	100	90-100	75-95	50-65	30-40
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
229----------- Orpha	0-2	Loamy sand----	SM	A-2	0	0	100	95-100	50-60	20-30	---	NP
	2-60	Sand, loamy sand.	SM	A-2	0	0	100	95-100	60-80	15-35	---	NP
230*:												
Orpha--------	0-5	Loamy sand----	SM	A-2	0	0	100	95-100	50-60	20-30	---	NP
	5-60	Sand, loamy sand.	SM	A-2	0	0	100	95-100	60-80	15-35	---	NP
Tullock------	0-5	Loamy sand----	SM	A-2	0	0	100	100	70-80	20-30	---	NP
	5-24	Loamy sand, sand.	SM, SP-SM	A-2, A-3	0	0	100	100	70-80	5-25	---	NP
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
231*:												
Orpha--------	0-7	Loamy sand----	SM	A-2	0	0	100	95-100	50-60	20-30	---	NP
	7-60	Sand, loamy sand.	SM	A-2	0	0	100	95-100	60-80	15-35	---	NP
Vonalee------	0-3	Loamy sand----	SM	A-2	0	0	100	95-100	70-80	20-30	---	NP
	3-22	Sandy loam, fine sandy loam.	SC-SM, SC	A-2, A-4	0	0	100	95-100	70-80	30-40	20-30	5-10
	22-60	Loamy sand, loamy fine sand, sandy loam.	SM, SC-SM	A-2	0	0	100	95-100	70-80	20-35	<25	NP-5
Roughlock----	0-4	Loam----------	CL-ML	A-4	0	0	95-100	95-100	95-100	75-95	20-25	5-10
	4-17	Loam, silt loam, silty clay loam.	CL-ML	A-4	0	0	95-100	95-100	95-100	75-95	20-25	5-10
	17-60	Loam, silt loam, silty clay loam.	CL-ML	A-4	0	0	95-100	95-100	95-100	75-95	20-25	5-10
232*:												
Persayo------	0-5	Loam----------	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	85-95	60-75	25-35	5-15
	5-15	Loam, clay loam.	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	85-100	60-75	25-35	5-15
	15	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments	Frag-ments	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
232*:												
Greybull-----	0-5	Loam----------	ML	A-4	0	0	100	100	70-85	60-70	30-35	5-10
	5-17	Clay loam, loam.	CL	A-6	0	0	100	100	70-85	65-75	30-40	10-20
	17-24	Sandy clay loam, loam.	CL, SC	A-6	0	0	100	100	55-70	45-55	30-35	10-15
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
233*:												
Pesmore------	0-3	Very gravelly sandy loam.	GM, SM	A-2, A-1	0-5	10-20	60-80	50-60	30-50	20-35	25-35	NP-10
	3-9	Very cobbly sandy clay loam, very cobbly loam, very cobbly clay loam.	GM-GC, GC	A-2, A-4, A-6, A-1-b	0-15	30-40	50-65	45-60	30-45	20-45	25-35	5-15
	9-26	Very cobbly sandy clay loam, very cobbly loam, very cobbly clay loam.	GM-GC, GC	A-2, A-4, A-6, A-1-b	0-15	30-40	50-65	45-60	30-45	20-45	25-35	5-15
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Asholler-----	0-3	Gravelly loam	ML, GM, SM	A-4	0-10	0-15	55-80	50-75	40-60	35-55	<35	NP-10
	3-17	Very gravelly clay loam, very gravelly sandy clay loam, very gravelly loam.	GM-GC, GM, GC	A-2	0-10	10-35	40-60	35-55	25-40	25-35	25-35	5-10
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
234----------- Petrie	0-3	Clay loam-----	CL	A-6	0	0	80-100	75-100	75-100	60-80	35-40	15-20
	3-60	Clay loam, clay, silty clay.	CL, CH	A-7	0	0	80-100	75-100	75-100	60-95	40-55	20-35
235*:												
Petrie, wet--	0-4	Clay loam-----	CL	A-6	0	0	90-100	90-100	70-90	60-80	35-40	15-20
	4-60	Clay loam, clay.	CL, CH	A-7	0	0	90-100	90-100	75-95	70-90	40-55	20-30
Zigweid, wet-	0-2	Loam----------	CL	A-6	0	0	95-100	95-100	90-100	70-85	25-30	10-15
	2-15	Clay loam-----	CL	A-6	0	0	95-100	95-100	90-100	70-85	30-35	10-15
	15-60	Clay loam-----	CL	A-6	0	0	95-100	95-100	90-100	70-85	30-35	10-15

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
236*:												
Petrie-------	0-1	Clay loam-----	CL	A-6	0	0	80-100	75-100	75-100	60-80	35-40	15-20
	1-60	Clay loam, clay, silty clay.	CL, CH	A-7	0	0	80-100	75-100	75-100	60-95	40-55	20-35
Arvada-------	0-2	Fine sandy loam.	SM	A-4	0	0	90-100	90-100	80-90	40-50	15-20	NP-5
	2-18	Clay, silty clay, clay loam.	CL, CH	A-7	0	0	90-100	90-100	90-100	75-95	40-65	20-35
	18-38	Clay loam, silty clay, clay.	CL, CH	A-7	0	0	90-100	90-100	90-100	75-90	40-60	15-30
	38-60	Clay loam, silty clay loam, clay.	CL	A-7	0	0	90-100	90-100	90-100	75-90	40-50	15-25
237*:												
Peyton-------	0-3	Loam----------	CL	A-6	0	0	95-100	95-100	80-90	55-70	25-35	10-15
	3-18	Clay loam, sandy clay loam.	CL	A-6, A-7	0	0	95-100	95-100	80-90	50-75	35-45	15-25
	18-27	Sandy clay loam, loam.	CL	A-6	0	0	95-100	95-100	80-90	50-65	30-35	10-15
	27-60	Sandy loam, loam.	SC-SM, SC	A-4	0	0	95-100	95-100	75-85	35-50	<30	5-10
Holderness---	0-9	Loam----------	CL, CL-ML	A-4, A-6	0	0	95-100	90-100	70-95	50-80	25-35	5-15
	9-26	Clay loam, clay.	CL, CH	A-6, A-7	0	0	95-100	90-100	80-95	60-85	35-65	15-35
	26-60	Clay loam, sandy clay loam.	CL, SC	A-6	0	0	95-100	90-100	75-95	45-75	30-40	10-20
238: Pits and dumps.												
239*:												
Pokeman------	0-1	Loam----------	CL	A-6	0	0	90-100	85-100	75-90	55-70	30-35	10-15
	1-10	Loam, clay loam.	CL	A-6	0	0	80-95	75-90	65-80	55-70	30-40	10-20
	10-24	Loam, clay loam.	CL	A-6	0	0	80-95	75-90	65-80	50-70	30-40	10-20
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Threetop-----	0-2	Loam----------	CL-ML, CL	A-4	0	0	90-100	85-100	70-85	50-60	25-30	5-10
	2-11	Clay loam-----	CL	A-6	0	0	90-100	85-100	70-85	50-65	30-40	15-20
	11-37	Gravelly loam, loam.	SC, CL, CL-ML, SC-SM	A-4	0	0-5	70-95	65-90	55-75	45-55	20-30	5-10
	37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
240*:												
Poposhia-----	0-4	Very fine sandy loam.	CL-ML, CL, SC-SM, SC	A-4	0	0	90-100	75-100	70-100	45-55	20-30	5-10
	4-60	Loam----------	CL-ML, CL	A-4, A-6	0	0	90-100	75-100	70-100	50-80	20-35	5-15
Blazon-------	0-4	Loam----------	CL-ML, CL	A-4	0	0-5	85-100	80-100	70-90	65-75	25-30	5-10
	4-10	Loam, clay loam, sandy clay loam.	CL-ML, CL	A-4, A-6	0	0-5	85-100	80-100	70-90	55-80	25-40	5-15
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
241*:												
Rawlins------	0-2	Sandy loam----	SM, SC-SM	A-4, A-2-4	0	0	85-100	80-100	60-75	30-50	<30	NP-10
	2-7	Sandy clay loam.	SC, CL	A-6	0	0	85-100	80-100	65-75	40-55	25-35	10-20
	7-18	Sandy loam, gravelly sandy loam.	SC-SM, SC	A-2-4, A-4	0	0	75-100	70-95	50-70	25-45	<30	5-10
	18-60	Gravelly sandy loam.	SC-SM, SC, GC, GM-GC	A-1-b, A-2-4	0	0	60-80	55-75	35-55	20-35	<30	5-10
McFadden-----	0-2	Sandy loam----	SM, SC-SM	A-4	0	0	90-100	90-100	65-80	40-50	<25	NP-5
	2-10	Sandy loam----	SM, SC-SM	A-4	0	0	90-100	90-100	65-80	35-50	<25	NP-5
	10-60	Gravelly sandy loam.	GM, SM, GM-GC, SC-SM	A-2, A-1, A-4	0	0	50-75	50-75	40-60	20-40	<25	NP-5
Blackhall----	0-2	Fine sandy loam.	SM	A-4	0	0-5	90-100	90-100	75-85	35-45	<20	NP-5
	2-13	Sandy loam, fine sandy loam.	SM	A-4, A-2-4	0	0-5	90-100	85-100	55-85	30-45	<20	NP-5
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
242*:												
Rawlins------	0-2	Sandy loam----	SM, SC-SM	A-4, A-2-4	0	0	85-100	80-100	60-75	30-50	<30	NP-10
	2-8	Sandy clay loam.	SC, CL	A-6	0	0	85-100	80-100	65-75	40-55	25-35	10-20
	8-60	Sandy loam, gravelly sandy loam.	SC-SM, SC	A-2-4, A-4	0	0	75-100	70-95	50-70	25-45	<30	5-10
Rock River---	0-3	Sandy loam----	SC, SC-SM	A-2, A-4	0	0	90-100	85-100	65-85	30-45	<30	5-10
	3-20	Sandy clay loam.	SC, CL	A-6	0	0	80-100	75-100	70-90	40-60	25-35	10-15
	20-43	Sandy loam----	SC-SM	A-2, A-4	0	0	80-100	75-100	55-80	20-50	20-30	5-10
	43-60	Gravelly sandy loam.	SM, SC-SM	A-2-4, A-1-b	0	0-10	75-85	60-75	40-55	15-35	<30	NP-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
243*:												
Redsun-------	0-12	Extremely channery loam.	GM	A-2, A-4	10-20	40-50	40-50	35-45	30-45	25-40	20-25	NP-5
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
244*:												
Redsun-------	0-4	Very channery loam.	ML, GM	A-2, A-4	10-20	15-35	45-70	40-60	40-60	30-55	20-35	NP-10
	4-7	Extremely flaggy loam, extremely flaggy silt loam, very flaggy silt loam.	ML, CL-ML, GM, SM	A-4	25-35	20-30	50-80	45-75	45-75	35-65	20-25	NP-5
	7	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Redbow-------	0-3	Loam----------	ML	A-4	0	0	95-100	95-100	90-100	75-95	20-25	NP-5
	3-11	Loam, silt loam.	ML	A-4	0	0	95-100	95-100	95-100	75-95	25-35	NP-10
	11-27	Loam, silt loam.	ML	A-4	0	0	95-100	95-100	95-100	75-95	25-35	NP-10
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
245*:												
Rekop--------	0-1	Loam----------	CL, CL-ML	A-4	0	0	80-95	75-90	70-85	65-75	25-30	5-10
	1-12	Silt loam, loam.	CL, CL-ML	A-4	0	0	80-95	75-90	70-90	65-90	25-30	5-10
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
246*:												
Relsob-------	0-3	Sandy loam----	SM, SC-SM	A-2-4, A-4	0	0	95-100	95-100	75-85	30-50	<30	NP-10
	3-19	Sandy clay loam.	SC, CL	A-6	0	0	95-100	95-100	80-90	45-65	30-35	10-15
	19-60	Sand----------	SM, SP-SM	A-3, A-2-4	0	0	95-100	95-100	70-80	5-15	<25	NP
Peyton-------	0-5	Sandy loam----	SM, SC-SM, SC	A-2, A-1	0	0	95-100	80-100	35-50	20-35	20-30	NP-10
	5-34	Sandy clay loam.	SC, CL	A-2, A-6	0	0	95-100	80-100	60-70	30-60	30-40	10-20
	34-48	Sandy loam----	SM, SC-SM	A-2, A-4	0	0	90-100	80-100	60-70	25-45	<30	NP-10
	48-60	Sand----------	SM, SP-SM	A-3, A-2	0	0	90-100	80-100	55-65	5-15	<25	NP

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
247*:												
Rencot-------	0-2	Very channery loam.	GM-GC, GC	A-2, A-4, A-6	0-5	10-20	40-60	35-55	30-50	25-40	25-35	5-15
	2-11	Very channery loam.	GM-GC, GC	A-2, A-4, A-6	0-5	15-35	40-60	35-55	30-50	25-40	25-35	5-15
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Blazon-------	0-3	Gravelly loam	CL-ML, CL	A-4	0	0-5	75-85	70-80	60-70	50-60	25-30	5-10
	3-16	Gravelly loam, gravelly sandy clay loam.	CL-ML, CL, SC-SM	A-4, A-6	0	0-5	75-85	70-80	60-70	45-60	25-40	5-15
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
248*:												
Rencot-------	0-5	Gravelly loam	GM-GC, GC	A-4, A-6	0	0-10	55-65	50-65	40-55	35-50	25-35	5-15
	5-12	Very gravelly loam.	GM-GC, GC	A-2-4, A-2-6, A-1-b	0	5-15	35-55	30-50	25-45	20-35	25-35	5-15
	12-17	Very gravelly loam.	GM-GC, GC	A-2-4, A-2-6, A-1-b	0	5-15	35-55	30-50	25-45	20-35	25-35	5-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
249*:												
Rencot-------	0-4	Gravelly loam	GM-GC, GC	A-4, A-6	0	0-10	55-65	50-65	40-55	35-50	25-35	5-15
	4-9	Very gravelly loam.	GM-GC, GC	A-2-4, A-2-6, A-1-b	0	5-15	35-55	30-50	25-45	20-35	25-35	5-15
	9-15	Very cobbly loam.	GM-GC, GC	A-2-4, A-2-6, A-4, A-6	0	30-55	50-65	45-60	40-50	30-45	25-35	5-15
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Duffson------	0-2	Loam----------	CL-ML, CL	A-4, A-6	0	0	85-100	75-100	70-90	50-70	25-35	5-15
	2-10	Clay loam, loam.	CL	A-6	0	0	85-100	75-100	75-90	55-75	30-40	10-15
	10-22	Loam, clay loam.	CL, CL-ML	A-4, A-6	0	0	85-100	75-100	70-85	50-75	25-35	5-15
	22	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
250*:												
Rencot-------	0-3	Very gravelly sandy loam.	GM-GC, GM	A-1, A-2-4	0	5-10	40-55	35-50	30-45	10-25	<25	NP-5
	3-10	Very channery sandy loam, very channery sandy clay loam.	GM-GC, GM	A-2-4, A-1	0-5	15-35	40-55	35-55	25-40	10-30	<30	NP-10
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Thermopolis--	0-4	Channery loam	GC, GM-GC, CL-ML, CL	A-4, A-6	0	0-10	60-75	60-75	50-65	40-60	25-35	5-15
	4-11	Loam, channery loam.	GC, GM-GC, CL-ML, CL	A-4, A-6	0	0-10	60-100	60-100	50-80	40-75	25-35	5-15
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
251-----------	0-7	Sandy loam----	SM, SC-SM	A-4	0	0	85-100	80-100	50-70	35-45	<25	NP-5
Rivra	7-60	Very gravelly sand, very gravelly loamy coarse sand, extremely gravelly sand.	GP, GP-GM, GM	A-1	0	0-15	25-55	20-50	10-30	0-15	<25	NP
252*:												
Rivra--------	0-8	Sandy loam----	SM, SC-SM	A-4	0	0	85-100	80-100	50-70	35-45	<25	NP-5
	8-60	Very gravelly sand, very gravelly loamy coarse sand, extremely gravelly sand.	GP, GP-GM, GM	A-1	0	0-15	25-55	20-50	10-30	0-15	<25	NP
Urban land.												
253-----------	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop												
254*:												
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Birdsley-----	0-2	Loam----------	CL, CL-ML	A-4	0	0	95-100	95-100	85-95	70-85	25-30	5-10
	2-17	Loam, clay loam.	CL, CL-ML	A-4, A-6	0	0	95-100	95-100	85-95	70-85	25-35	5-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
255*:												
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Cathedral----	0-3	Gravelly sandy loam.	SM, SC-SM	A-1	0-10	0-5	80-95	50-65	25-35	15-25	15-20	NP-5
	3-11	Very gravelly sandy loam.	GP-GM	A-1	0-10	10-20	25-40	20-30	15-20	5-10	15-20	NP-5
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
256*:												
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Ustic Torriorthents	0-60	Variable------	---	---	---	---	---	---	---	---	---	---
Rubble land--	0-60	Fragmental material.	GP	A-1	70-80	75-90	0-10	0-5	0-5	0	---	NP
257----------- Rock River	0-2	Sandy loam----	SM, SC-SM	A-2-4, A-4	0	0	95-100	95-100	75-85	30-45	<30	NP-10
	2-14	Sandy clay loam.	SC, CL	A-6	0	0	95-100	95-100	80-90	45-60	25-35	10-15
	14-22	Sandy loam----	SC, SC-SM	A-4	0	0	95-100	95-100	80-90	40-50	<30	5-10
	22-60	Fine sandy loam, sandy loam.	SC-SM, SC	A-4	0	0	95-100	95-100	80-90	40-50	<30	5-10
258*:												
Rock River---	0-2	Sandy loam----	SM, SC-SM	A-2-4, A-4	0	0	95-100	95-100	75-85	30-45	<30	NP-10
	2-13	Sandy clay loam.	SC, CL	A-6	0	0	95-100	95-100	80-90	45-60	25-35	10-15
	13-20	Sandy loam----	SC, SC-SM	A-4	0	0	95-100	95-100	80-90	40-50	<30	5-10
	20-60	Fine sandy loam, sandy loam.	SC-SM, SC	A-4	0	0	95-100	95-100	80-90	40-50	<30	5-10
Hawkstone----	0-1	Sandy loam----	SM, SC-SM	A-2	0	0	100	95-100	55-70	25-35	20-25	NP-5
	1-42	Sandy loam, coarse sandy loam.	SM, SC-SM	A-2	0	0	100	95-100	50-70	20-35	20-25	NP-5
	42-60	Sandy loam, coarse sandy loam, loamy sand.	SM	A-2	0	0	100	95-100	50-70	15-35	---	NP

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
259*:												
Rock River---	0-3	Sandy loam----	SM, SC-SM	A-2-4, A-4	0	0	90-100	85-100	60-80	30-45	<30	NP-10
	3-22	Sandy clay loam.	SC, CL	A-6	0	0	90-100	85-100	75-85	45-60	25-35	10-15
	22-31	Sandy clay loam.	SC, CL	A-6	0	0	90-100	85-100	75-85	45-60	25-35	10-15
	31-60	Fine sandy loam, sandy loam, sandy clay loam.	SC-SM, SC, CL, CL-ML	A-4	0	0	90-100	85-100	70-85	40-55	20-30	5-10
Pinelli------	0-4	Loam----------	CL	A-6	0	0	95-100	95-100	85-95	60-70	30-35	10-15
	4-24	Clay loam, clay.	CH	A-7	0	0	95-100	95-100	90-100	70-85	50-65	30-40
	24-32	Clay loam, clay.	CH	A-7	0	0	95-100	95-100	90-100	70-85	50-65	30-40
	32-60	Loam, clay loam.	CL	A-6	0	0	95-100	95-100	85-95	65-75	30-40	10-20
Blazon-------	0-3	Loam----------	CL-ML, CL	A-4	0	0-5	85-100	80-100	70-90	65-75	25-30	5-10
	3-15	Loam, clay loam, sandy clay loam.	CL-ML, CL	A-4, A-6	0	0-5	85-100	80-100	70-90	55-80	25-40	5-15
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
260*:												
Rock River---	0-5	Sandy loam----	SC, SC-SM	A-2, A-4	0	0	90-100	85-100	65-85	30-45	<30	5-10
	5-18	Sandy clay loam.	SC, CL	A-6	0	0	80-100	75-100	70-90	40-60	25-35	10-15
	18-26	Sandy loam----	SC-SM	A-2, A-4	0	0	80-100	75-100	55-80	20-50	20-30	5-10
	26-60	Gravelly sandy loam.	SM, SC-SM	A-2-4, A-1-b	0	0-10	75-85	60-75	40-55	15-35	<30	NP-10
Rawlins------	0-3	Gravelly sandy loam.	SM, SC-SM	A-2-4, A-1-b	0	0	65-80	60-75	40-55	20-35	<30	NP-10
	3-9	Sandy clay loam.	SC, CL	A-6	0	0	85-100	80-100	65-75	40-55	25-35	10-20
	9-60	Gravelly sandy loam.	SC-SM, SC, GC, GM-GC	A-1-b, A-2-4	0	0	60-80	55-75	35-55	20-35	<30	5-10
Brownsto-----	0-4	Gravelly sandy loam.	SC-SM	A-1-b, A-2-4	0	5-10	65-85	60-80	40-55	20-30	20-30	NP-10
	4-14	Gravelly sandy loam.	SC-SM	A-1-b, A-2-4	0	5-15	65-85	60-80	40-55	20-30	20-30	NP-10
	14-60	Very gravelly sandy loam.	GM-GC, GM	A-1, A-2-4	0	10-15	40-50	35-45	25-30	10-20	20-30	NP-10
261*:												
Rock River---	0-3	Loamy sand----	SC-SM, SM	A-2-4	0	0	95-100	95-100	75-85	25-35	<25	NP-5
	3-15	Sandy clay loam.	SC, CL	A-6	0	0	95-100	95-100	80-90	45-60	25-35	10-15
	15-23	Sandy loam----	SC, SC-SM	A-4	0	0	95-100	95-100	80-90	40-50	<30	5-10
	23-60	Fine sandy loam, sandy loam.	SC-SM, SC	A-4	0	0	95-100	95-100	80-90	40-50	<30	5-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
261*:												
Ryan Park----	0-4	Sandy loam----	SM, SC-SM	A-2, A-4	0	0	95-100	90-100	65-80	30-50	<25	NP-5
	4-20	Sandy loam, fine sandy loam.	SC-SM, SM, SC	A-4	0	0	95-100	90-100	65-80	35-50	20-30	NP-10
	20-60	Sandy loam, fine sandy loam.	SM, SC-SM	A-2, A-4	0	0	95-100	90-100	65-80	30-40	<25	NP-5
McFadden-----	0-3	Sandy loam----	ML, SM, SC-SM, CL-ML	A-4	0	0	90-100	90-100	65-80	45-60	<25	NP-5
	3-60	Sandy loam, fine sandy loam.	SM, SC-SM, CL-ML	A-4	0	0	90-100	90-100	65-80	45-60	<25	NP-5
262*:												
Rock River---	0-4	Sandy loam----	SM, SC-SM	A-2-4, A-4	0	0	95-100	95-100	75-85	30-45	<30	NP-10
	4-18	Sandy clay loam.	SC, CL	A-6	0	0	95-100	95-100	80-90	45-60	25-35	10-15
	18-60	Fine sandy loam, sandy loam.	SC-SM, SC	A-4	0	0	95-100	95-100	80-90	40-50	<30	5-10
Worfman------	0-2	Sandy loam----	SC-SM, SC, SM	A-2-4, A-4	0	0-10	85-100	80-100	60-80	25-45	<30	NP-10
	2-7	Sandy clay loam, clay loam.	CL	A-6	0	0-10	85-100	80-100	65-85	50-75	30-40	10-20
	7-12	Sandy clay loam.	CL	A-6	0	0-10	85-100	80-100	65-85	50-60	30-35	10-15
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
263*:												
Rock River---	0-3	Sandy loam----	SM, SC-SM	A-2-4, A-4	0	0	95-100	95-100	75-85	30-45	<30	NP-10
	3-15	Sandy clay loam.	SC, CL	A-6	0	0	95-100	95-100	80-90	45-60	25-35	10-15
	15-60	Fine sandy loam, sandy loam.	SC-SM, SC	A-4	0	0	95-100	95-100	80-90	40-50	<30	5-10
Ryan Park----	0-4	Loamy sand----	SM	A-2	0	0	85-100	85-100	60-75	15-30	---	NP
	4-16	Sandy loam, fine sandy loam.	SC-SM, SM, SC	A-4	0	0	85-100	85-100	65-80	35-50	20-30	NP-10
	16-24	Sandy loam, fine sandy loam.	SM, SC-SM	A-2, A-4	0	0	85-100	85-100	65-80	30-45	15-20	NP-5
	24-60	Gravelly loamy sand, gravelly sandy loam.	SM, SP-SM, SC-SM	A-1	0	0	60-80	50-75	30-50	10-25	<25	NP-5

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
263*:												
Hawkstone	0-3	Sandy loam	SM, SC-SM	A-2	0	0	100	95-100	55-70	25-35	20-25	NP-5
	3-48	Sandy loam, coarse sandy loam.	SM, SC-SM	A-2	0	0	100	95-100	50-70	20-35	20-25	NP-5
	48-60	Sandy loam, coarse sandy loam, loamy sand.	SM	A-2	0	0	100	95-100	50-70	15-35	---	NP
264 Roughlock	0-3	Loam	CL-ML	A-4	0	0	95-100	95-100	95-100	75-95	20-25	5-10
	3-32	Loam, silt loam, silty clay loam.	CL-ML	A-4	0	0	95-100	95-100	95-100	75-95	20-25	5-10
	32-60	Loam, silt loam, silty clay loam.	CL-ML	A-4	0	0	95-100	95-100	95-100	75-95	20-25	5-10
265*:												
Roughlock	0-2	Loam	CL-ML, CL	A-4	0	0	95-100	95-100	90-95	70-85	25-30	5-10
	2-29	Loam, clay loam, silt loam.	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	80-90	70-80	25-40	5-15
	29-47	Loam, clay loam, silt loam.	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	80-90	70-80	25-40	5-15
	47	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Redbow	0-3	Loam	ML	A-4	0	0	95-100	95-100	90-100	75-95	20-25	NP-5
	3-11	Loam, silt loam.	ML	A-4	0	0	95-100	95-100	95-100	75-95	25-35	NP-10
	11-26	Loam, silt loam.	ML	A-4	0	0	95-100	95-100	95-100	75-95	25-35	NP-10
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Redspear	0-2	Loam	ML	A-4	0	0	95-100	95-100	90-100	75-90	20-25	NP-5
	2-9	Loam, silt loam.	ML	A-4	0	0	95-100	95-100	90-100	75-90	25-35	NP-10
	9-15	Loam, silt loam.	ML	A-4	0	0	80-95	75-90	60-75	50-65	25-35	NP-10
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
266*:												
Roughlock	0-5	Loam	CL-ML	A-4	0	0	95-100	95-100	95-100	75-95	20-25	5-10
	5-15	Loam, silt loam, silty clay loam.	CL-ML	A-4	0	0	95-100	95-100	95-100	75-95	20-25	5-10
	15-60	Loam, silt loam, silty clay loam.	CL-ML	A-4	0	0	95-100	95-100	95-100	75-95	20-25	5-10

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
266*:												
Buffcreek----	0-2	Gravelly loam	CL-ML	A-4	0	0-15	70-80	60-75	55-70	50-60	<30	5-10
	2-15	Very gravelly loam.	GM-GC, GC	A-2-4	0-5	10-20	50-65	45-60	40-55	25-35	<30	5-10
	15-60	Very gravelly loam.	GM-GC, GC	A-2-4	0-10	10-20	50-65	45-60	40-55	25-35	<30	5-10
267*:												
Rubble land--	0-60	Fragmental material.	GP	A-1	70-80	75-90	0-10	0-5	0-5	0	---	NP
Ustic Torriorthents-------	0-60	Variable------	---	---	20-80	10-80	---	---	---	---	---	---
268----------- Ryan Park	0-5	Loamy sand----	SM	A-2	0	0	85-100	85-100	60-75	15-30	---	NP
	5-17	Sandy loam, fine sandy loam.	SC-SM, SM, SC	A-4	0	0	85-100	85-100	65-80	35-50	20-30	NP-10
	17-60	Gravelly loamy sand, gravelly sandy loam.	SM, SP-SM, SC-SM	A-1	0	0	60-80	50-75	30-50	10-25	<25	NP-5
269*:												
Ryan Park----	0-2	Sandy loam----	SM, SC-SM	A-2, A-4	0	0	95-100	90-100	65-80	30-50	<25	NP-5
	2-13	Sandy loam, fine sandy loam.	SC-SM, SM, SC	A-4	0	0	95-100	90-100	65-80	35-50	20-30	NP-10
	13-60	Sandy loam, fine sandy loam.	SM, SC-SM	A-2, A-4	0	0	95-100	90-100	65-80	30-40	<25	NP-5
Elk Mountain-	0-2	Sandy loam----	SM	A-2	0	0	90-100	90-100	70-80	20-30	<25	NP-5
	2-9	Sandy loam----	SM, SC-SM	A-4	0	0	90-100	90-100	70-80	35-50	<30	NP-10
	9-16	Sandy loam----	SM, SC-SM	A-4	0	0	90-100	90-100	70-80	35-50	<30	NP-10
	16-23	Sandy loam, loamy sand.	SM	A-2, A-4	0	0	90-100	90-100	65-80	20-40	<25	NP-5
	23	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
270*:												
Saddle-------	0-3	Sandy loam----	SM, SC-SM	A-2, A-4	0	0	75-100	75-100	50-70	30-40	20-25	NP-5
	3-14	Sandy clay loam.	SC, CL	A-6	0	0	75-100	75-100	65-90	35-60	30-40	10-20
	14-18	Sandy loam, fine sandy loam, sandy clay loam.	SM, ML, SC-SM, CL-ML	A-4	0	0	75-100	75-100	55-75	35-65	20-30	NP-10
	18-30	Sandy loam, fine sandy loam.	SM, SC-SM	A-2, A-4	0	0	75-100	75-100	50-70	30-50	20-25	NP-5
	30	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments >10 inches	Frag-ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
270*:												
Griffy-------	0-3	Fine sandy loam.	SM, SC-SM	A-2, A-4	0	0	80-100	80-100	60-70	30-40	<20	NP-5
	3-21	Sandy clay loam.	SC-SM, SC, CL-ML, CL	A-4, A-6	0	0	80-100	80-100	50-70	40-60	25-35	5-15
	21-60	Fine sandy loam, sandy loam.	SM, SC-SM	A-2-4, A-4	0	0	80-100	80-100	60-75	25-50	<20	NP-5
271: Salt flats.												
272----------- Samday	0-2	Very cobbly clay.	CL, CH	A-7	0	30-45	75-85	70-80	65-75	60-70	45-55	25-30
	2-12	Clay, clay loam, silty clay.	CL, CH	A-7	0	0	100	95-100	85-100	75-95	40-55	20-30
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
273*:												
Savageton----	0-2	Gravelly clay	CL, CH, SC, GC	A-7	0	0	60-80	50-75	45-65	45-55	45-55	25-30
	2-16	Clay, clay loam.	CL, CH	A-7	0	0	100	100	90-100	80-90	45-55	20-30
	16-37	Clay loam, clay.	CL, CH	A-7	0	0	100	100	90-100	80-90	45-55	20-30
	37	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Samday-------	0-2	Cobbly silty clay loam.	CL	A-6, A-7	0	15-35	90-100	85-90	75-85	70-80	35-45	15-20
	2-17	Clay, clay loam, silty clay.	CL, CH	A-7	0	0	100	95-100	85-100	75-95	40-55	20-30
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
274*:												
Shingle------	0-3	Loam----------	CL-ML, CL	A-4	0	0-5	90-100	85-100	75-90	55-75	25-30	5-10
	3-16	Clay loam, loam, sandy clay loam.	CL	A-6	0	0	90-100	85-100	75-90	55-75	30-40	10-20
	16	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Samday-------	0-3	Clay----------	CH	A-7	0	0	100	90-100	85-95	75-90	50-60	30-35
	3-17	Clay, clay loam, silty clay.	CH	A-7	0	0	100	95-100	85-100	75-95	50-60	30-35
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
275*:												
Shingle------	0-2	Loam----------	CL-ML, CL	A-4	0	0-5	90-100	85-100	75-90	55-75	25-30	5-10
	2-13	Clay loam, loam, sandy clay loam.	CL	A-6	0	0	90-100	85-100	75-90	55-75	30-40	10-20
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Taluce-------	0-3	Sandy loam----	SM	A-4	0	0	95-100	90-100	70-85	35-45	<30	NP-5
	3-12	Sandy loam, fine sandy loam.	SM, SC-SM	A-4	0	0	95-100	90-100	70-85	35-50	<30	NP-10
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
276*:												
Shingle------	0-1	Loam----------	CL-ML, CL	A-4	0	0-5	90-100	85-100	75-90	55-75	25-30	5-10
	1-11	Clay loam, loam, sandy clay loam.	CL	A-6	0	0	90-100	85-100	75-90	55-75	30-40	10-20
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Theedle------	0-1	Fine sandy loam.	SM, SC-SM	A-4	0	0	95-100	95-100	75-80	35-50	<25	NP-5
	1-26	Loam, clay loam.	CL	A-6, A-7	0	0	95-100	95-100	75-85	60-70	30-45	10-25
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
277----------- Silhouette	0-3	Clay loam-----	CL	A-7	0	0	90-100	90-100	85-95	75-85	40-50	20-30
	3-11	Clay loam, clay, silty clay.	CL, CH	A-7	0	0	100	95-100	85-100	75-95	45-60	25-35
	11-60	Clay loam, clay, silty clay.	CL, CH	A-7	0	0	100	95-100	85-100	75-95	45-60	25-35
278*:												
Silhouette---	0-2	Clay loam-----	CL	A-7	0	0	90-100	90-100	85-95	75-85	40-50	20-30
	2-13	Clay loam, clay, silty clay.	CL, CH	A-7	0	0	100	95-100	85-100	75-95	45-60	25-35
	13-60	Clay loam, clay, silty clay.	CL, CH	A-7	0	0	100	95-100	85-100	75-95	45-60	25-35
Petrie-------	0-3	Clay loam-----	CL	A-6	0	0	80-100	75-100	75-100	60-80	35-40	15-20
	3-60	Clay loam, clay, silty clay.	CL, CH	A-7	0	0	80-100	75-100	75-100	60-95	40-55	20-35

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
279*:												
Starley------	0-8	Cobbly loam---	CL, CL-ML, SC, SC-SM	A-4, A-6	5-10	10-25	75-95	70-90	60-80	45-70	25-35	5-15
	8-18	Very cobbly loam, very cobbly clay loam.	GC, GM-GC	A-2, A-4, A-6	10-20	30-45	55-65	50-65	40-55	30-50	25-35	5-15
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
280*:												
Stunner------	0-3	Sandy loam----	SM, SC-SM	A-4	0	0	90-100	85-100	70-80	35-50	<30	NP-10
	3-17	Clay loam, loam.	CL	A-6	0	0	90-100	85-100	75-100	65-80	25-40	10-20
	17-23	Loam, clay loam.	CL	A-6	0	0	90-100	85-100	75-95	65-75	25-40	10-20
	23-60	Loam----------	CL-ML, CL	A-4, A-6	0	0	90-100	90-100	75-95	65-75	25-35	5-15
Pinelli------	0-3	Clay loam-----	CL	A-6, A-7	0	0	95-100	95-100	85-95	65-75	35-45	15-20
	3-22	Silty clay, clay.	CH	A-7	0	0	95-100	95-100	90-100	80-90	55-65	35-40
	22-30	Clay loam, clay.	CH	A-7	0	0	95-100	95-100	90-100	70-85	50-65	30-40
	30-60	Loam, clay loam.	CL	A-6	0	0	95-100	95-100	85-95	65-75	30-40	10-20
281*:												
Sunup--------	0-4	Very gravelly loam.	GC, GM-GC	A-2-4, A-2-6, A-1-b	0	5-15	40-60	30-50	25-40	20-35	25-35	5-15
	4-13	Very gravelly loam, very gravelly sandy clay loam.	GC, GM-GC	A-2-4, A-2-6, A-1-b	0	5-15	40-60	30-50	25-40	20-35	25-35	5-15
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Kishona------	0-3	Loam----------	CL	A-6	0	0	90-100	85-100	75-85	55-75	30-35	10-15
	3-60	Loam, clay loam.	CL	A-6, A-7	0	0	90-100	85-100	75-90	55-80	30-45	10-20
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
282*:												
Terro--------	0-3	Loamy sand----	SM, SP-SM	A-2	0	0	100	100	65-75	10-20	---	NP
	3-20	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	0	100	100	70-90	30-45	20-25	NP-5
	20-34	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	0	100	100	70-90	30-40	20-25	NP-5
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
282*:												
Vonalee------	0-2	Fine sandy loam.	SC-SM, SM, SC	A-2, A-4	0	0	100	95-100	70-80	25-40	<30	NP-10
	2-19	Sandy loam, fine sandy loam.	SC-SM, SC	A-2, A-4	0	0	100	95-100	70-80	30-40	20-30	5-10
	19-60	Loamy sand, loamy fine sand, sandy loam.	SM, SC-SM	A-2	0	0	100	95-100	70-80	20-35	<25	NP-5
283*:												
Theedle------	0-3	Clay loam-----	CL	A-6, A-7	0	0	95-100	95-100	75-85	60-75	35-45	15-25
	3-27	Loam, clay loam.	CL	A-6, A-7	0	0	95-100	95-100	75-85	60-70	30-45	10-25
	27	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Shingle------	0-2	Loam----------	CL-ML, CL	A-4	0	0-5	90-100	85-100	75-90	55-75	25-30	5-10
	2-17	Clay loam, loam, sandy clay loam.	CL	A-6	0	0	90-100	85-100	75-90	55-75	30-40	10-20
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Kishona------	0-5	Clay loam-----	CL	A-6, A-7	0	0	90-100	85-100	80-90	60-80	35-45	15-20
	5-60	Loam, clay loam.	CL	A-6, A-7	0	0	90-100	85-100	75-90	55-80	30-45	10-20
284*:												
Threetop-----	0-2	Sandy loam----	SM, SC-SM	A-4	0	0	90-100	85-100	60-80	35-50	<30	NP-10
	2-13	Sandy clay loam.	CL	A-6	0	0	90-100	85-100	60-80	50-65	30-40	10-20
	13-18	Sandy clay loam, sandy loam, loam.	SC-SM, CL-ML, SC, CL	A-4	0	0	90-100	85-100	60-80	45-60	25-30	5-10
	18-24	Very gravelly sandy clay loam, very gravelly sandy loam.	GM-GC, GC	A-2-4, A-1-b	0	0-5	35-60	35-50	25-40	15-30	20-30	5-10
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Sunup--------	0-2	Very gravelly sandy clay loam.	GC, GM-GC	A-2-4, A-2-6, A-1-b	0	5-15	40-60	30-50	25-40	20-35	25-35	5-15
	2-10	Very gravelly loam, very gravelly sandy clay loam.	GC, GM-GC	A-2-4, A-2-6, A-1-b	0	5-15	40-60	30-50	25-40	20-35	25-35	5-15
	10	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments >10 inches	Frag- ments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
284*:												
Frontier-----	0-4	Sandy loam----	SC-SM, SM	A-4	0	0-5	80-100	80-100	50-70	35-50	20-30	NP-10
	4-14	Sandy clay loam, clay loam.	CL, SC	A-6	0	0-5	80-95	80-95	50-70	45-60	30-40	15-20
	14-17	Sandy clay loam, clay loam.	CL, SC	A-6	0	0-5	80-95	80-95	50-70	45-60	30-40	15-20
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
285----------- Tisworth	0-3	Sandy loam----	SC-SM, SM, SC	A-2, A-4	0	0	95-100	95-100	70-80	30-45	20-30	NP-10
	3-14	Sandy clay loam, clay loam.	CL	A-6	0	0	95-100	95-100	50-75	50-75	25-40	10-20
	14-60	Loam, sandy clay loam, sandy loam.	SC, SC-SM, CL, CL-ML	A-2, A-4	0	0	95-100	95-100	70-85	30-65	20-30	5-10
286*:												
Travson------	0-3	Sandy loam----	SM, SC-SM	A-2, A-4	0	0	90-100	75-100	60-75	25-40	<25	NP-5
	3-11	Gravelly sandy loam, channery fine sandy loam, sandy loam.	SM, SC-SM	A-1, A-2, A-4	0	0-5	75-100	60-100	45-70	15-40	<25	NP-5
	11	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Rock outcrop-	0-60	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
287*:												
Typic Fluvaquents-	0-60	Variable------	---	---	---	---	---	---	---	---	---	---
Aquic Ustifluvents	0-60	Variable------	---	---	---	---	---	---	---	---	---	---
288----------- Typic Haplaquolls	0-60	Variable------	---	---	---	---	---	---	---	---	---	---
289----------- Typic Torrifluvents	0-60	Variable------	---	---	---	---	---	---	---	---	---	---
290*:												
Uffens, thick surface-----	0-6	Very fine sandy loam.	CL-ML	A-4	0	0	100	95-100	80-100	50-65	20-25	5-10
	6-15	Clay loam, sandy clay loam, loam.	CL	A-6	0	0	100	95-100	65-85	60-75	30-40	10-20
	15-60	Loam----------	CL-ML, CL	A-4, A-6	0	0	100	95-100	65-85	60-75	25-35	5-15

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
290*:												
Uffens-------	0-2	Very fine sandy loam.	CL-ML	A-4	0	0	100	95-100	80-100	50-65	20-25	5-10
	2-18	Clay loam, sandy clay loam, loam.	CL	A-6	0	0	100	95-100	65-85	60-75	30-40	10-20
	18-60	Loam----------	CL-ML, CL	A-4, A-6	0	0	100	95-100	65-85	60-75	25-35	5-15
291*:												
Uffens-------	0-5	Very fine sandy loam.	CL-ML	A-4	0	0	100	95-100	80-100	50-65	20-25	5-10
	5-12	Clay loam, sandy clay loam, loam.	CL	A-6	0	0	100	95-100	65-85	60-75	30-40	10-20
	12-60	Loam----------	CL-ML, CL	A-4, A-6	0	0	100	95-100	65-85	60-75	25-35	5-15
Typic Torrifluvents-------	0-60	Variable------	---	---	---	---	---	---	---	---	---	---
292----------- Ulm	0-4	Clay loam-----	CL	A-6	0	0	95-100	95-100	80-100	70-80	35-40	15-20
	4-16	Clay loam, clay.	CL, CH	A-7	0	0	95-100	95-100	85-100	70-80	45-60	25-35
	16-60	Clay loam, clay.	CL, CH	A-7	0	0	95-100	95-100	85-100	65-80	40-55	20-30
293*:												
Ulm----------	0-2	Loam----------	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	80-100	70-80	25-35	5-15
	2-24	Clay loam, clay.	CL, CH	A-7	0	0	95-100	95-100	85-100	70-80	45-60	25-35
	24-60	Clay loam, clay.	CL, CH	A-7	0	0	95-100	95-100	85-100	65-80	40-55	20-30
Absted-------	0-2	Fine sandy loam.	SM	A-4	0	0	90-100	85-100	65-80	35-50	20-25	NP-5
	2-11	Clay loam, clay.	CL, CH	A-7	0	0	85-100	85-100	70-90	60-80	40-55	20-30
	11-18	Clay loam, clay.	CL, CH	A-7	0	0	85-100	85-100	70-90	60-80	40-55	20-30
	18-60	Clay loam, clay.	CL	A-6, A-7	0	0	85-100	85-100	70-90	60-80	35-50	15-25
294----------- Ulrant	0-9	Loam----------	CL	A-6	0	0-5	95-100	80-90	60-75	50-65	25-35	10-15
	9-23	Gravelly clay loam, gravelly loam.	SC	A-6, A-7	0	0-5	90-100	50-65	40-55	35-50	30-45	10-20
	23-54	Gravelly loam	SC	A-6	0	0-5	90-100	50-65	40-55	35-50	25-35	10-15
	54	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
295*:												
Urban land.												

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
295*:												
Clarkelen----	0-2	Sandy loam----	SM	A-2, A-4	0	0	95-100	90-100	60-75	30-50	<25	NP-5
	2-42	Stratified loamy sand to loam.	SM	A-2, A-4	0	0	95-100	90-100	60-75	25-45	<25	NP-5
	42-60	Very gravelly sand, very gravelly coarse sand.	GP-GM, SP-SM	A-1	0	0-5	45-60	35-50	15-30	5-10	---	NP-5
296*: Urban land.												
Docpar-------	0-6	Loam----------	ML	A-4	0	0	95-100	90-100	60-80	55-75	30-35	5-10
	6-18	Loam, clay loam.	CL	A-6	0	0	95-100	90-100	60-80	55-75	30-40	10-15
	18-25	Loam, clay loam.	CL	A-6	0	0	95-100	90-100	60-80	55-75	30-40	10-15
	25-60	Stratified loam to sand.	SM	A-4	---	0-5	85-100	75-95	65-85	35-50	20-30	NP-5
297*: Urban land.												
Savageton----	0-2	Clay----------	CL, CH	A-7	0	0	100	100	90-100	85-90	45-55	20-30
	2-18	Clay, clay loam.	CL, CH	A-7	0	0	100	100	90-100	80-90	45-55	20-30
	18-26	Clay loam, clay.	CL, CH	A-7	0	0	100	100	90-100	80-90	45-55	20-30
	26	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Samday-------	0-1	Clay----------	CH	A-7	0	0	100	90-100	85-95	75-90	50-60	30-35
	1-12	Clay, clay loam, silty clay.	CH	A-7	0	0	100	95-100	85-100	75-95	50-60	30-35
	12	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
298*: Urban land.												
Silhouette---	0-4	Clay loam-----	CL	A-7	0	0	90-100	90-100	85-95	75-85	40-50	20-30
	4-12	Clay loam, clay, silty clay.	CL, CH	A-7	0	0	100	95-100	85-100	75-95	45-60	25-35
	12-60	Clay loam, clay, silty clay.	CL, CH	A-7	0	0	100	95-100	85-100	75-95	45-60	25-35
299*: Urban land.												
Theedle------	0-2	Loam----------	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	75-85	60-70	25-35	5-15
	2-34	Loam, clay loam.	CL	A-6, A-7	0	0	95-100	95-100	75-85	60-70	30-45	10-25
	34	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

			Classification		Frag- ments	Frag- ments	Percentage passing sieve number--					
Soil name and map symbol	Depth	USDA texture	Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200	Liquid limit	Plas- ticity index
	In				Pct	Pct					Pct	
299*:												
Shingle------	0-1	Loam----------	CL-ML, CL	A-4	0	0-5	90-100	85-100	75-90	55-75	25-30	5-10
	1-14	Clay loam, loam, sandy clay loam.	CL	A-6	0	0	90-100	85-100	75-90	55-75	30-40	10-20
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
300----------- Vonalee	0-2	Loamy sand----	SM	A-2	0	0	100	95-100	70-80	20-30	---	NP
	2-14	Sandy loam, fine sandy loam.	SC-SM, SC	A-2, A-4	0	0	100	95-100	70-80	30-40	20-30	5-10
	14-60	Loamy sand, loamy fine sand, sandy loam.	SM, SC-SM	A-2	0	0	100	95-100	70-80	20-35	<25	NP-5
301*:												
Vonalee------	0-3	Loamy sand----	SM	A-2	0	0	100	95-100	70-80	20-30	---	NP
	3-19	Sandy loam, fine sandy loam.	SC-SM, SC	A-2, A-6	0	0	100	95-100	70-80	30-40	20-30	5-10
	19-60	Loamy sand, loamy fine sand, sandy loam.	SM, SC-SM	A-2	0	0	100	95-100	70-80	20-35	<25	NP-5
Hiland-------	0-5	Sandy loam----	SM, SC-SM	A-2, A-4	0	0	95-100	95-100	65-75	30-40	<30	NP-10
	5-26	Sandy clay loam.	SC, CL	A-6	0	0	95-100	95-100	70-80	40-60	30-40	10-20
	26-60	Sandy loam, fine sandy loam.	SC-SM, SC	A-2, A-4	0	0	95-100	95-100	60-75	30-50	20-30	5-10
302*:												
Vonalee------	0-6	Sandy loam----	SC-SM, SM, SC	A-2, A-4	0	0	100	95-100	70-80	25-40	<30	NP-10
	6-28	Sandy loam, fine sandy loam.	SC-SM, SC	A-2, A-4	0	0	100	95-100	70-80	30-40	20-30	5-10
	28-60	Loamy sand, loamy fine sand, sandy loam.	SM, SC-SM	A-2	0	0	100	95-100	70-80	20-35	<25	NP-5
Slickspots.												
303----------- Whiteriver	0-5	Loam----------	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	65-80	50-60	25-35	5-15
	5-19	Clay loam, clay.	CL	A-7	0	0	95-100	95-100	65-80	55-65	40-50	20-25
	19-23	Clay loam, clay.	CL	A-7	0	0	95-100	95-100	65-80	55-65	40-50	20-25
	23-60	Clay loam, loam.	CL	A-6	0	0	95-100	95-100	90-100	75-90	30-40	15-20

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments	Frag- ments	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
304*:												
Woosley------	0-5	Loam----------	CL-ML, CL	A-4	0	0	80-100	75-100	70-90	55-70	25-35	5-10
	5-18	Clay loam-----	CL	A-6	0	0	80-100	75-100	70-90	60-70	30-40	10-20
	18-32	Clay loam, loam.	CL, CL-ML	A-6, A-4	0	0	80-100	75-100	70-90	50-70	25-35	5-15
	32	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Starley------	0-8	Cobbly loam---	CL, CL-ML, SC, SC-SM	A-4, A-6	5-10	10-25	75-95	70-90	60-80	45-70	25-35	5-15
	8-18	Very cobbly loam, very cobbly clay loam.	GC, GM-GC	A-2, A-4, A-6	10-20	30-45	55-65	50-65	40-55	30-50	25-35	5-15
	18	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
305*:												
Worf---------	0-2	Fine sandy loam.	SM, SC-SM, SC	A-2-4, A-4	0	0	95-100	95-100	75-85	30-45	<30	NP-10
	2-8	Sandy clay loam.	SC, CL	A-6	0	0	95-100	95-100	75-85	45-60	30-35	10-15
	8-14	Sandy clay loam, fine sandy loam.	SC-SM, SC	A-4	0	0	95-100	95-100	75-85	35-50	25-30	5-10
	14	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Bowbac-------	0-3	Fine sandy loam.	SC-SM, SC, SM	A-4	0	0	90-100	90-100	75-85	40-50	<25	NP-10
	3-10	Sandy loam, sandy clay loam.	SC-SM, SC, CL-ML, CL	A-4	0	0	90-100	90-100	75-85	40-55	20-30	5-10
	10-15	Sandy clay loam, sandy loam.	SC-SM, SC, CL-ML, CL	A-4, A-6	0	0	90-100	90-100	75-85	40-55	25-35	5-15
	15-28	Sandy loam, fine sandy loam.	SC-SM, SC	A-4	0	0	90-100	90-100	75-85	35-50	20-30	5-10
	28	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
306*:												
Worf---------	0-2	Loam----------	CL-ML	A-4	0	0	100	95-100	65-90	50-65	25-35	5-10
	2-10	Clay loam, sandy clay loam, loam.	CL	A-6	0	0	100	95-100	75-90	60-75	25-40	10-20
	10-13	Clay loam, sandy clay loam, loam.	CL	A-6	0	0	100	95-100	75-90	60-75	25-35	10-15
	13	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments	Fragments	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
	In				Pct	Pct					Pct	
306*:												
Briggsdale---	0-4	Loam----------	CL, CL-ML	A-4, A-6	0	0	90-100	85-100	80-100	60-80	25-35	5-15
	4-10	Clay loam, clay.	CL, CH	A-7	0	0	90-100	90-100	90-100	70-90	40-65	20-40
	10-19	Clay loam, clay.	CH, CL	A-7	0	0	90-100	90-100	90-100	70-95	40-65	20-40
	19-32	Clay loam, loam.	CL	A-6	0	0	90-100	85-100	80-95	65-75	30-40	10-20
	32	Weathered bedrock.	---	---	---	---	---	---	---	---	---	---
307*:												
Worf Variant-	0-8	Fine sandy loam.	SC-SM	A-4	0	0-10	80-95	80-95	60-80	35-50	25-30	5-10
	8-17	Sandy clay loam, clay loam.	CL, SC	A-6	0	0-10	80-95	80-95	60-80	45-70	30-35	10-15
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Cushman Variant-----	0-2	Fine sandy loam.	SC-SM	A-2, A-4	0	0-5	90-100	90-100	70-85	30-40	20-30	5-10
	2-24	Sandy clay loam, clay loam.	SC, CL	A-6	0	0-5	90-100	90-100	70-80	45-70	30-35	10-15
	24	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
Peyton-------	0-12	Fine sandy loam.	SC-SM, SC	A-4	0	0	95-100	95-100	80-90	35-50	<30	5-10
	12-30	Clay loam, sandy clay loam.	CL	A-6, A-7	0	0	95-100	95-100	80-90	50-75	35-45	15-25
	30-60	Sandy clay loam, loam.	CL	A-6	0	0	95-100	95-100	80-90	50-65	30-35	10-15
308*:												
Worfstone----	0-2	Sandy loam----	SM, SC-SM	A-2	0	0-5	90-100	80-95	50-75	20-35	<25	NP-5
	2-6	Very gravelly sandy clay loam, extremely gravelly sandy clay loam.	SC, GC, SP-SC, GP-GC	A-2	0	0-5	40-90	15-50	10-30	5-20	30-35	10-15
	6-17	Extremely gravelly sandy loam.	GP-GM, SP-SM, GP, SP	A-1	0	0-5	50-75	10-25	5-20	0-15	<25	NP-5
	17	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
McFadden-----	0-2	Sandy loam----	SM, SC-SM	A-4	0	0	90-100	90-100	65-80	40-50	<25	NP-5
	2-26	Sandy loam----	SM, SC-SM	A-4	0	0	90-100	90-100	65-80	35-50	<25	NP-5
	26-60	Gravelly sandy loam.	GM, SM, GM-GC, SC-SM	A-2, A-1, A-4	0	0	50-75	50-75	40-60	20-40	<25	NP-5

See footnote at end of table.

TABLE 15.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO			4	10	40	200		
	In				Pct	Pct					Pct	
308*:												
Lupinto------	0-2	Gravelly sandy loam.	SM, GM	A-4	0	0-5	60-80	55-75	40-60	35-50	<25	NP-5
	2-8	Gravelly clay loam, gravelly sandy clay loam.	CL, GC, SC	A-6	0	0-5	60-80	55-75	45-70	35-55	30-40	10-20
	8-43	Very gravelly sandy clay loam.	GC	A-2	0	0-5	35-55	30-50	20-40	15-30	30-35	10-15
	43-60	Very gravelly sandy loam.	GP-GM, GM	A-1	0	0-5	35-55	30-50	20-35	10-20	---	NP
309*:												
Zeomont------	0-5	Loamy sand----	SM	A-1, A-2	0	0	100	100	40-60	15-25	---	NP
	5-60	Sand, loamy sand.	SM, SP-SM	A-1, A-2	0	0	100	100	40-60	10-20	---	NP
Ryan Park----	0-2	Loamy sand----	SM	A-2	0	0	85-100	85-100	60-75	15-30	---	NP
	2-30	Sandy loam, fine sandy loam.	SC-SM, SM, SC	A-4	0	0	85-100	85-100	65-80	35-50	20-30	NP-10
	30-60	Gravelly loamy sand, gravelly sandy loam.	SM, SP-SM, SC-SM	A-1	0	0	60-80	50-75	30-50	10-25	<25	NP-5
310----------- Zigweid	0-3	Loam----------	CL	A-6	0	0	95-100	95-100	80-90	65-75	25-35	10-15
	3-14	Loam, clay loam.	CL	A-6	0	0	95-100	95-100	80-90	65-80	30-40	10-20
	14-60	Loam, clay loam.	CL	A-6	0	0	95-100	95-100	80-90	65-80	30-40	10-20
311*:												
Zigweid------	0-3	Loam----------	CL	A-6	0	0	95-100	95-100	80-90	65-75	25-35	10-15
	3-18	Loam, clay loam.	CL	A-6	0	0	95-100	95-100	80-90	65-80	30-40	10-20
	18-60	Loam, clay loam.	CL	A-6	0	0	95-100	95-100	80-90	65-80	30-40	10-20
Theedle------	0-2	Loam----------	CL-ML, CL	A-4, A-6	0	0	95-100	95-100	75-85	60-70	25-35	5-15
	2-36	Loam, clay loam.	CL	A-6, A-7	0	0	95-100	95-100	75-85	60-70	30-45	10-25
	36	Unweathered bedrock.	---	---	---	---	---	---	---	---	---	---
312*:												
Zigweid------	0-4	Clay loam-----	CL	A-6	0	0	95-100	95-100	80-90	70-80	35-40	15-20
	4-16	Loam, clay loam.	CL	A-6	0	0	95-100	95-100	80-90	65-80	30-40	10-20
	16-60	Loam, clay loam.	CL	A-6	0	0	95-100	95-100	80-90	65-80	30-40	10-20
Urban land.												

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS

(The symbol < means less than; > means more than. Entries under "Erosion factors--T" apply to the entire profile. Entries under "Wind erodibility group" and "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated)

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
101	0-3	20-27	1.15-1.25	0.6-2.0	0.12-0.14	>7.8	4-8	Moderate	0.49	5	5	1-2
Absher	3-19	40-55	1.15-1.25	<0.06	0.10-0.12	>8.4	8-16	High	0.49			
	19-60	35-50	1.15-1.25	<0.06	0.09-0.11	>8.4	8-16	High	0.55			
102*:												
Adel	0-5	18-27	1.15-1.25	0.6-2.0	0.17-0.21	6.6-7.3	<2	Low	0.28	5	6	3-5
	5-21	18-30	1.15-1.25	0.6-2.0	0.17-0.21	6.6-7.3	<2	Low	0.28			
	21-60	20-30	1.25-1.35	0.6-2.0	0.16-0.18	7.4-7.8	<2	Low	0.32			
Pagosa	0-13	18-27	1.20-1.30	0.6-2.0	0.15-0.17	5.6-6.5	<2	Low	0.32	3	6	2-3
	13-20	27-40	1.20-1.30	0.2-0.6	0.15-0.21	5.6-6.0	<2	Moderate	0.28			
	20-39	35-50	1.20-1.30	0.06-0.2	0.15-0.21	5.6-6.0	<2	High	0.32			
	39-50	27-40	1.25-1.35	0.2-0.6	0.15-0.17	5.6-6.5	<2	High	0.28			
	50	---	---	---	---	---	---	---	---			
103*:												
Alcova	0-2	8-15	1.25-1.35	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low	0.24	3	3	1-2
	2-13	20-30	1.25-1.35	0.6-2.0	0.11-0.16	7.4-8.4	<2	Moderate	0.24			
	13-25	10-27	1.30-1.40	2.0-6.0	0.06-0.12	7.9-8.4	<2	Low	0.15			
	25-60	10-25	1.25-1.35	2.0-6.0	0.05-0.07	7.9-9.0	<2	Low	0.02			
Rock River	0-2	8-18	1.25-1.35	2.0-6.0	0.11-0.14	6.6-7.8	<2	Low	0.24	5	3	1-2
	2-13	20-35	1.25-1.35	0.6-2.0	0.14-0.18	7.4-8.4	<2	Low	0.24			
	13-60	10-20	1.35-1.45	2.0-6.0	0.10-0.14	7.9-9.0	<2	Low	0.28			
104*:												
Alcova	0-4	8-15	1.25-1.35	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low	0.24	3	3	1-2
	4-16	20-25	1.25-1.35	0.6-2.0	0.11-0.16	7.4-8.4	<2	Moderate	0.24			
	16-32	10-20	1.25-1.35	2.0-6.0	0.05-0.07	7.9-9.0	<2	Low	0.10			
	32-60	0-10	1.45-1.55	6.0-20	0.02-0.04	7.9-9.0	<2	Low	0.05			
Stunner	0-4	15-25	1.20-1.30	0.6-2.0	0.15-0.17	6.6-7.3	<2	Low	0.32	5	6	2-3
	4-17	20-35	1.20-1.30	0.6-2.0	0.17-0.21	6.6-7.8	<2	Moderate	0.37			
	17-48	20-27	1.25-1.35	6.0-20	0.14-0.18	7.9-9.0	<2	Low	0.37			
	48-60	0-10	1.50-1.60	>20	0.03-0.06	7.9-9.0	<2	Low	0.05			
105*:												
Alflack	0-2	3-10	1.35-1.45	2.0-6.0	0.08-0.10	5.6-7.3	<2	Low	0.28	1	2	.5-1
	2-22	3-10	1.45-1.55	6.0-20	0.03-0.05	5.6-7.3	<2	Low	0.05			
	22	---	---	---	---	---	---	---	---			
Foxton	0-3	12-18	1.25-1.35	2.0-6.0	0.13-0.15	6.1-7.3	<2	Low	0.37	2	3	1-2
	3-12	15-25	1.25-1.35	0.6-2.0	0.11-0.15	6.1-7.3	<2	Low	0.17			
	12-34	35-50	1.15-1.25	0.06-0.2	0.11-0.16	6.1-7.3	<2	High	0.17			
	34	---	---	---	---	---	---	---	---			
106*:												
Alflack	0-2	5-12	1.25-1.35	2.0-6.0	0.06-0.08	5.6-7.3	<2	Low	0.15	1	8	.5-1
	2-26	3-10	1.45-1.55	6.0-20	0.03-0.05	5.6-7.3	<2	Low	0.05			
	26	---	---	---	---	---	---	---	---			
Irson	0-8	18-27	1.15-1.25	0.6-2.0	0.05-0.07	6.6-7.3	<2	Low	0.10	1	8	3-5
	8	---	---	---	---	---	---	---	---			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
106*:												
Foxton Variant--	0-2	18-25	1.15-1.25	0.6-2.0	0.16-0.18	6.1-6.5	<2	Low-------	0.32	3	5	2-3
	2-28	15-22	1.25-1.35	0.6-2.0	0.15-0.18	5.6-6.5	<2	Low-------	0.37			
	28-46	28-35	1.25-1.35	0.6-2.0	0.15-0.20	6.1-7.3	<2	Moderate	0.20			
	46	---	---	---	---	---	---	----------	----			
107-------------- Almy	0-3	20-25	1.15-1.25	0.6-2.0	0.16-0.18	6.6-7.8	<2	Low-------	0.32	5	6	1-3
	3-22	24-35	1.15-1.25	0.6-2.0	0.19-0.21	7.4-8.4	<2	Moderate	0.32			
	22-60	15-25	1.35-1.50	0.6-2.0	0.16-0.18	7.9-9.0	<4	Low-------	0.37			
108-------------- Amodac	0-3	20-35	1.15-1.25	0.6-2.0	0.17-0.20	7.9-9.0	<2	Moderate	0.32	5	4L	1-2
	3-11	20-35	1.25-1.35	0.2-0.6	0.15-0.20	7.9-9.0	2-8	Moderate	0.43			
	11-26	20-35	1.25-1.35	0.2-0.6	0.15-0.17	>8.4	2-8	Moderate	0.43			
	26-60	20-35	1.25-1.35	0.2-0.6	0.08-0.10	>8.4	4-16	Moderate	0.43			
109*:												
Amodac----------	0-4	15-20	1.25-1.35	0.6-2.0	0.13-0.15	7.9-9.0	<2	Low-------	0.37	5	3	1-2
	4-15	20-35	1.25-1.35	0.2-0.6	0.15-0.20	7.9-9.0	2-8	Moderate	0.43			
	15-26	20-35	1.25-1.35	0.2-0.6	0.15-0.17	>8.4	2-8	Moderate	0.43			
	26-60	20-35	1.25-1.35	0.2-0.6	0.08-0.10	>8.4	4-16	Moderate	0.43			
Keyner----------	0-2	20-27	1.20-1.30	0.6-2.0	0.14-0.17	7.4-8.4	<2	Moderate	0.32	5	5	.5-2
	2-13	20-35	1.25-1.35	0.06-0.2	0.15-0.20	7.9-9.0	<2	Moderate	0.37			
	13-23	20-35	1.25-1.35	0.06-0.2	0.12-0.15	>9.0	2-8	Moderate	0.37			
	23-60	15-25	1.30-1.40	0.2-0.6	0.11-0.13	>8.4	4-16	Low-------	0.37			
110-------------- Aquic Ustifluvents	0-60	---	---	---	---	>8.4	>16	----------	----	---	---	---
111*:												
Aquic Ustifluvents---	0-60	---	---	---	---	>8.4	>16	----------	----	---	---	---
Orpha-----------	0-4	3-8	1.35-1.45	>20	0.05-0.06	6.6-7.8	<2	Low-------	0.17	5	1	1-2
	4-60	3-8	1.45-1.60	>20	0.06-0.07	6.6-7.8	<2	Low-------	0.28			
112*:												
Arvada----------	0-3	27-35	1.10-1.25	0.2-0.6	0.14-0.16	7.4-9.0	<4	Moderate	0.32	5	6	.5-1
	3-13	35-50	1.20-1.40	<0.06	0.11-0.13	>9.0	<2	High------	0.37			
	13-25	35-50	1.20-1.40	<0.06	0.10-0.12	>9.0	>8	High------	0.37			
	25-60	28-45	1.20-1.40	0.06-0.2	0.10-0.12	>7.8	>8	High------	0.37			
Absted----------	0-2	28-35	1.20-1.30	0.2-0.6	0.18-0.20	6.6-7.8	<2	Moderate	0.37	5	6	1-2
	2-12	35-50	1.30-1.40	0.06-0.2	0.16-0.18	7.9-9.0	<4	High------	0.43			
	12-27	35-50	1.30-1.45	0.06-0.2	0.11-0.13	>8.4	>8	High------	0.43			
	27-60	30-45	1.30-1.45	0.06-0.2	0.11-0.13	7.9-9.0	>8	High------	0.43			
Slickspots.												
113*:												
Arvada----------	0-3	15-27	1.10-1.25	0.6-2.0	0.16-0.18	7.4-9.0	<4	Low-------	0.32	5	6	.5-1
	3-12	35-50	1.20-1.40	<0.06	0.11-0.13	>9.0	<2	High------	0.37			
	12-37	35-50	1.20-1.40	<0.06	0.10-0.12	>9.0	>8	High------	0.37			
	37-60	28-45	1.20-1.40	0.06-0.2	0.10-0.12	>7.8	>8	High------	0.37			
Slickspots.												

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
114*:												
Bachus----------	0-5	15-25	1.15-1.25	0.6-2.0	0.16-0.18	6.1-7.3	<2	Low-------	0.32	2	5	2-3
	5-19	18-35	1.25-1.35	0.6-2.0	0.16-0.18	6.1-7.3	<2	Moderate	0.37			
	19-33	25-35	1.25-1.35	0.6-2.0	0.10-0.12	6.6-7.3	<2	Moderate	0.20			
	33	---	---	---	---	---	---	----------	----			
Nathrop---------	0-6	15-25	1.20-1.30	0.6-2.0	0.10-0.13	6.6-7.3	<2	Low-------	0.17	1	7	2-3
	6-36	25-35	1.25-1.35	0.6-2.0	0.05-0.10	6.6-7.8	<2	Low-------	0.05			
	36	---	---	---	---	---	---	----------	----			
115*:												
Bachus----------	0-4	15-25	1.15-1.25	0.6-2.0	0.16-0.18	6.1-7.3	<2	Low-------	0.32	2	5	2-3
	4-16	18-35	1.25-1.35	0.6-2.0	0.16-0.18	6.1-7.3	<2	Moderate	0.37			
	16-22	25-35	1.25-1.35	0.6-2.0	0.10-0.12	6.6-7.3	<2	Moderate	0.20			
	22	---	---	---	---	---	---	----------	----			
Clayburn--------	0-16	15-25	1.25-1.40	0.6-2.0	0.14-0.17	6.1-7.3	<2	Low-------	0.28	5	5	2-4
	16-37	27-35	1.30-1.50	0.6-2.0	0.17-0.21	6.1-7.3	<2	Moderate	0.28			
	37-60	15-25	1.25-1.45	0.6-2.0	0.16-0.19	6.1-7.3	<2	Low-------	0.24			
116*:												
Bachus----------	0-4	15-25	1.15-1.25	0.6-2.0	0.16-0.18	6.1-7.3	<2	Low-------	0.32	2	5	2-3
	4-23	18-35	1.25-1.35	0.6-2.0	0.16-0.18	6.1-7.3	<2	Moderate	0.37			
	23	---	---	---	---	---	---	----------	----			
Pagosa----------	0-15	18-27	1.20-1.30	0.6-2.0	0.15-0.17	5.6-6.5	<2	Low-------	0.32	3	6	2-3
	15-23	27-40	1.20-1.30	0.2-0.6	0.15-0.21	5.6-6.0	<2	Moderate	0.28			
	23-43	35-50	1.20-1.30	0.06-0.2	0.15-0.21	5.6-6.0	<2	High------	0.32			
	43-51	27-40	1.25-1.35	0.2-0.6	0.15-0.17	5.6-6.5	<2	High------	0.28			
	51	---	---	---	---	---	---	----------	----			
117-------------- Badland	0-60	---	---	---	---	---	<2	----------	----	---	---	---
118*:												
Badwater--------	0-6	15-25	1.15-1.25	0.6-2.0	0.08-0.11	6.1-7.3	<2	Low-------	0.17	1	8	3-5
	6-24	25-35	1.25-1.35	0.6-2.0	0.06-0.09	6.1-7.3	<2	Moderate	0.10			
	24-35	25-35	1.25-1.35	0.6-2.0	0.02-0.04	6.1-7.3	<2	Moderate	0.05			
	35-60	20-30	1.25-1.35	0.6-2.0	0.02-0.04	6.1-7.3	<2	Moderate	0.05			
Rubble land-----	0-60	0	2.00-2.60	>20	0.-0.1	---	<2	Low-------	----	---	8	<.1
119*:												
Barnum----------	0-7	10-18	1.25-1.35	0.6-2.0	0.11-0.13	7.4-8.4	2-8	Low-------	0.32	5	3	2-3
	7-60	18-26	1.25-1.40	0.6-2.0	0.12-0.14	7.9-9.0	2-8	Moderate	0.37			
Redbank---------	0-6	10-18	1.25-1.35	2.0-6.0	0.11-0.14	7.4-8.4	<4	Low-------	0.32	5	3	1-2
	6-60	10-18	1.35-1.45	2.0-6.0	0.11-0.14	7.9-9.0	<4	Low-------	0.37			
120-------------- Bateson	0-6	15-25	1.15-1.25	0.6-2.0	0.16-0.18	6.6-7.8	<2	Moderate	0.32	5	5	1-2
	6-18	27-40	1.25-1.35	0.2-0.6	0.15-0.20	6.6-7.8	<2	Moderate	0.37			
	18-60	5-15	1.35-1.45	2.0-6.0	0.05-0.07	7.4-8.4	<2	Low-------	0.05			
121-------------- Bessemer	0-2	10-18	1.25-1.35	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low-------	0.24	1	3	2-3
	2-13	35-40	1.20-1.30	0.06-0.2	0.15-0.20	7.4-8.4	<2	High------	0.32			
	13-60	20-30	1.25-1.35	0.6-2.0	0.04-0.08	7.9-9.0	<2	Moderate	0.10			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
122--------------	0-2	28-35	1.15-1.25	0.2-0.6	0.14-0.18	7.4-8.4	<2	Moderate	0.24	1	6	2-3
Bessemer	2-9	35-45	1.20-1.30	0.06-0.2	0.13-0.16	7.4-8.4	<2	High------	0.37			
	9-14	28-38	1.25-1.35	0.2-0.6	0.13-0.19	7.9-8.4	<2	High------	0.32			
	14-60	20-35	1.25-1.35	0.6-2.0	0.05-0.10	7.9-9.0	<2	Moderate	0.10			
123*:												
Bessemer--------	0-3	28-35	1.15-1.25	0.2-0.6	0.17-0.21	7.4-8.4	<2	Moderate	0.32	1	6	2-3
	3-11	35-45	1.20-1.30	0.06-0.2	0.13-0.16	7.4-8.4	<2	High------	0.37			
	11-60	20-35	1.25-1.35	0.6-2.0	0.05-0.10	7.9-9.0	<2	Moderate	0.10			
Urban land.												
124--------------	0-2	35-40	1.15-1.25	0.2-0.6	0.19-0.21	7.4-8.4	<4	Moderate	0.37	5	4	1-2
Blackdraw	2-7	35-55	1.20-1.30	0.06-0.2	0.12-0.15	7.4-8.4	<8	High------	0.43			
	7-60	35-55	1.20-1.30	0.06-0.2	0.08-0.10	7.4-8.4	>8	High------	0.43			
125*:												
Blackdraw-------	0-1	35-40	1.15-1.25	0.2-0.6	0.19-0.21	7.4-8.4	<4	Moderate	0.37	5	4	1-2
	1-12	35-55	1.20-1.30	0.06-0.2	0.12-0.15	7.4-8.4	<8	High------	0.43			
	12-60	35-55	1.20-1.30	0.06-0.2	0.08-0.10	7.4-8.4	>8	High------	0.43			
Lolite----------	0-1	35-55	1.10-1.20	0.06-0.2	0.14-0.16	7.4-8.4	<4	High------	0.37	1	4	1-2
	1-5	35-55	1.10-1.20	0.06-0.2	0.12-0.15	7.4-8.4	<4	High------	0.43			
	5-12	35-55	1.10-1.20	0.06-0.2	0.04-0.06	7.4-8.4	>8	High------	0.43			
	12	---	---	---	---	---	---	----------	----			
Gullied land.												
126*:												
Blazon----------	0-3	18-27	1.15-1.25	0.6-2.0	0.16-0.18	7.4-9.0	2-4	Low-------	0.32	1	4L	.5-1
	3-15	18-32	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	2-4	Low-------	0.37			
	15	---	---	---	---	---	---	----------	----			
Worfman---------	0-2	15-25	1.20-1.30	0.6-2.0	0.15-0.17	6.6-7.8	<2	Low-------	0.32	1	5	1-2
	2-11	20-34	1.20-1.30	0.6-2.0	0.15-0.19	6.6-7.8	<2	Moderate	0.32			
	11-17	20-30	1.20-1.30	0.6-2.0	0.15-0.19	7.9-9.0	<2	Low-------	0.32			
	17	---	---	---	---	---	---	----------	----			
127*:												
Blazon----------	0-3	18-27	1.15-1.25	0.6-2.0	0.14-0.16	7.4-9.0	2-4	Low-------	0.15	1	6	.5-1
	3-14	18-32	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	2-4	Low-------	0.37			
	14	---	---	---	---	---	---	----------	----			
Cragosen--------	0-5	15-25	1.15-1.30	0.6-2.0	0.14-0.16	7.4-8.4	<2	Low-------	0.20	1	7	1-2
	5-18	15-25	1.25-1.45	0.6-2.0	0.06-0.08	7.9-9.0	<2	Low-------	0.05			
	18	---	---	---	---	---	---	----------	----			
Worfman---------	0-2	15-25	1.20-1.30	0.6-2.0	0.15-0.17	6.6-7.8	<2	Low-------	0.32	1	5	1-2
	2-6	20-34	1.20-1.30	0.6-2.0	0.15-0.19	6.6-7.8	<2	Moderate	0.32			
	6-17	20-30	1.20-1.30	0.6-2.0	0.15-0.19	7.9-9.0	<2	Low-------	0.32			
	17	---	---	---	---	---	---	----------	----			
128*:												
Boettcher-------	0-2	27-35	1.10-1.20	0.2-0.6	0.14-0.17	6.6-7.8	<2	Moderate	0.17	3	8	1-2
	2-9	30-40	1.15-1.25	0.2-0.6	0.14-0.17	7.4-7.8	<2	Moderate	0.20			
	9-16	35-50	1.15-1.25	0.06-0.2	0.14-0.17	7.4-8.4	<2	High------	0.32			
	16-33	40-50	1.25-1.35	0.06-0.2	0.14-0.17	7.9-9.0	<2	High------	0.32			
	33	---	---	---	---	---	---	----------	----			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
128*:												
Brownsto--------	0-3	15-22	1.15-1.25	0.6-2.0	0.09-0.11	7.4-8.4	<2	Low-------	0.15	1	8	1-2
	3-21	15-25	1.25-1.35	0.6-2.0	0.09-0.11	7.9-9.0	<2	Low-------	0.20			
	21-60	15-25	1.25-1.35	0.6-2.0	0.05-0.09	7.9-9.0	<2	Low-------	0.10			
129*:												
Boettcher-------	0-2	18-27	1.15-1.25	0.6-2.0	0.15-0.17	6.6-7.8	<2	Low-------	0.28	3	6	2-3
	2-16	35-50	1.15-1.25	0.06-0.2	0.16-0.19	7.4-8.4	<2	High------	0.32			
	16-35	35-50	1.25-1.35	0.06-0.2	0.16-0.19	7.9-9.0	<2	High------	0.32			
	35	---	---	---	---	---	---	----------	----			
Pinelli---------	0-4	20-27	1.20-1.30	0.6-2.0	0.14-0.18	6.6-7.8	<2	Low-------	0.32	5	6	1-3
	4-24	35-50	1.15-1.25	0.2-0.6	0.17-0.21	6.6-7.8	<2	High------	0.37			
	24-32	35-50	1.20-1.30	0.2-0.6	0.14-0.18	7.9-8.4	<2	High------	0.37			
	32-60	20-30	1.25-1.35	0.6-2.0	0.14-0.19	7.9-9.0	<2	Moderate	0.37			
Worfman---------	0-4	15-25	1.20-1.30	0.6-2.0	0.15-0.17	6.6-7.8	<2	Low-------	0.32	1	5	1-2
	4-14	20-34	1.20-1.30	0.6-2.0	0.15-0.19	6.6-7.8	<2	Moderate	0.32			
	14-17	20-30	1.20-1.30	0.6-2.0	0.15-0.19	7.9-9.0	<2	Low-------	0.32			
	17	---	---	---	---	---	---	----------	----			
130*:												
Bosler----------	0-2	10-20	1.25-1.35	2.0-6.0	0.13-0.15	6.6-7.8	<2	Low-------	0.28	2	3	.5-1
	2-14	20-30	1.25-1.45	0.6-2.0	0.14-0.16	7.4-7.8	<2	Moderate	0.32			
	14-24	18-27	1.25-1.40	0.6-2.0	0.17-0.20	7.9-9.0	<2	Moderate	0.32			
	24-60	0-5	1.40-1.60	6.0-20	0.02-0.04	7.9-9.0	<2	Low-------	0.05			
Alcova----------	0-5	8-15	1.25-1.35	2.0-6.0	0.12-0.14	6.6-7.8	<2	Low-------	0.28	3	8	1-2
	5-17	20-30	1.25-1.35	0.6-2.0	0.11-0.16	7.4-8.4	<2	Moderate	0.24			
	17-30	10-27	1.30-1.40	2.0-6.0	0.06-0.12	7.9-8.4	<2	Low-------	0.15			
	30-60	10-25	1.25-1.35	2.0-6.0	0.05-0.07	7.9-9.0	<2	Low-------	0.02			
131*:												
Bosler----------	0-3	10-20	1.25-1.35	2.0-6.0	0.13-0.15	6.6-7.8	<2	Low-------	0.28	2	3	.5-1
	3-16	20-30	1.25-1.45	0.6-2.0	0.14-0.16	7.4-7.8	<2	Moderate	0.32			
	16-60	0-5	1.40-1.60	6.0-20	0.02-0.04	7.9-9.0	<2	Low-------	0.05			
Hiland----------	0-5	8-18	1.25-1.35	2.0-6.0	0.12-0.15	6.6-7.3	<2	Low-------	0.28	5	3	1-2
	5-24	20-30	1.25-1.35	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.32			
	24-60	10-20	1.30-1.40	2.0-6.0	0.10-0.15	7.9-9.0	<2	Low-------	0.32			
132*:												
Bowbac----------	0-3	10-20	1.35-1.45	2.0-6.0	0.10-0.15	6.6-8.4	<2	Low-------	0.28	2	3	1-2
	3-20	18-30	1.35-1.45	0.6-2.0	0.12-0.15	7.4-8.4	<2	Low-------	0.28			
	20-26	15-27	1.35-1.45	0.6-2.0	0.14-0.18	7.9-8.4	<2	Low-------	0.28			
	26-37	10-20	1.40-1.50	2.0-6.0	0.10-0.13	7.9-9.0	<2	Low-------	0.28			
	37	---	---	---	---	---	---	----------	----			
Hiland----------	0-2	8-18	1.25-1.35	2.0-6.0	0.10-0.13	6.6-7.3	<2	Low-------	0.32	5	3	1-2
	2-26	20-30	1.25-1.35	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.32			
	26-60	10-20	1.30-1.40	2.0-6.0	0.10-0.15	7.9-9.0	<2	Low-------	0.32			
133*:												
Bowbac----------	0-5	3-10	1.35-1.45	2.0-6.0	0.08-0.11	6.6-8.4	<2	Low-------	0.24	2	2	1-2
	5-13	18-30	1.35-1.45	0.6-2.0	0.12-0.15	7.4-8.4	<2	Low-------	0.28			
	13-23	15-27	1.35-1.45	0.6-2.0	0.14-0.18	7.9-8.4	<2	Low-------	0.28			
	23	---	---	---	---	---	---	----------	----			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
133*:												
Hiland----------	0-6	3-8	1.30-1.40	6.0-20	0.07-0.09	6.6-7.3	<2	Low-------	0.20	5	2	1-2
	6-13	15-20	1.30-1.40	2.0-6.0	0.10-0.12	6.6-7.3	<2	Low-------	0.28			
	13-28	20-30	1.25-1.35	0.6-2.0	0.14-0.16	6.6-7.3	<2	Moderate	0.28			
	28-38	15-25	1.30-1.45	0.6-2.0	0.12-0.15	7.9-9.0	<4	Low-------	0.28			
	38-60	15-20	1.35-1.45	2.0-6.0	0.11-0.13	7.9-9.0	<4	Low-------	0.24			
Worf------------	0-2	5-12	1.35-1.45	2.0-6.0	0.06-0.08	7.4-7.8	<2	Low-------	0.24	1	2	1-2
	2-7	15-25	1.25-1.35	0.6-2.0	0.12-0.16	7.4-7.8	<2	Low-------	0.28			
	7-15	18-27	1.25-1.35	0.6-2.0	0.14-0.18	7.4-8.4	<2	Moderate	0.28			
	15-19	12-24	1.30-1.40	0.6-2.0	0.12-0.16	7.9-9.0	<2	Low-------	0.32			
	19	---	---	---	---	---	---	----------	----			
134*:												
Bowbac----------	0-4	10-20	1.35-1.45	2.0-6.0	0.10-0.15	6.6-8.4	<2	Low-------	0.28	2	3	1-2
	4-17	18-30	1.35-1.45	0.6-2.0	0.12-0.15	7.4-8.4	<2	Low-------	0.28			
	17-22	10-20	1.40-1.50	2.0-6.0	0.10-0.13	7.9-9.0	<2	Low-------	0.28			
	22	---	---	---	---	---	---	----------	----			
Taluce----------	0-4	10-18	1.25-1.35	2.0-6.0	0.10-0.12	7.4-8.4	<2	Low-------	0.20	1	3	.5-1
	4-9	10-18	1.30-1.40	2.0-6.0	0.10-0.13	7.9-9.0	<2	Low-------	0.20			
	9	---	---	---	---	---	---	----------	----			
Terro-----------	0-3	8-12	1.25-1.35	2.0-6.0	0.09-0.14	6.6-7.8	<2	Low-------	0.28	2	3	1-2
	3-17	12-18	1.35-1.45	2.0-6.0	0.12-0.14	6.6-7.8	<2	Low-------	0.28			
	17-34	10-18	1.35-1.45	2.0-6.0	0.12-0.14	7.4-9.0	<2	Low-------	0.28			
	34	---	---	---	---	---	---	----------	----			
135------------- Bridger	0-10	18-27	1.15-1.25	0.6-2.0	0.16-0.18	6.1-7.3	<2	Low-------	0.32	5	6	2-3
	10-26	35-50	1.15-1.25	0.06-0.2	0.16-0.19	6.1-7.3	<2	High------	0.32			
	26-60	30-40	1.25-1.35	0.2-0.6	0.17-0.20	7.9-8.4	<2	High------	0.32			
136*:												
Brokenhorn------	0-4	28-40	1.15-1.25	0.2-0.6	0.19-0.21	7.9-8.4	<2	Moderate	0.32	5	4L	1-3
	4-32	35-50	1.20-1.30	0.06-0.2	0.15-0.20	7.9-9.0	2-4	High------	0.43			
	32-60	35-50	1.20-1.30	0.06-0.2	0.12-0.15	7.9-9.0	4-8	High------	0.43			
Hyshot----------	0-2	29-38	1.15-1.25	0.2-0.6	0.19-0.21	7.9-9.0	<2	Moderate	0.32	2	4L	1-2
	2-11	35-45	1.20-1.30	0.06-0.2	0.14-0.17	7.9-9.0	2-4	High------	0.37			
	11-23	35-45	1.20-1.30	0.06-0.2	0.12-0.15	7.4-8.4	4-8	High------	0.37			
	23	---	---	---	---	---	---	----------	----			
137*:												
Brownsto--------	0-3	15-22	1.15-1.25	0.6-2.0	0.09-0.11	7.4-8.4	<2	Low-------	0.15	1	8	1-2
	3-16	15-25	1.25-1.35	0.6-2.0	0.09-0.11	7.9-9.0	<2	Low-------	0.20			
	16-60	15-25	1.25-1.35	0.6-2.0	0.05-0.09	7.9-9.0	<2	Low-------	0.10			
Lupinto---------	0-3	12-18	1.20-1.30	0.6-2.0	0.08-0.11	7.4-8.4	<2	Low-------	0.17	1	7	1-3
	3-8	28-35	1.25-1.35	0.6-2.0	0.10-0.15	7.4-8.4	<2	Moderate	0.20			
	8-41	18-25	1.25-1.35	0.6-2.0	0.05-0.09	7.9-9.0	<4	Low-------	0.10			
	41-60	12-18	1.35-1.45	2.0-6.0	0.03-0.06	7.9-9.0	<4	Low-------	0.10			
138*:												
Buffcreek-------	0-3	12-18	1.15-1.25	0.6-2.0	0.09-0.11	6.6-7.8	<2	Low-------	0.20	1	7	1-2
	3-22	12-18	1.25-1.35	0.6-2.0	0.06-0.08	7.9-9.0	<2	Low-------	0.10			
	22-60	12-18	1.25-1.35	0.6-2.0	0.06-0.09	7.9-9.0	2-4	Low-------	0.10			
Redarrow--------	0-2	13-30	1.10-1.20	0.6-2.0	0.17-0.20	7.4-8.4	<2	Low-------	0.43	1	4L	1-2
	2-18	13-30	1.20-1.30	0.6-2.0	0.17-0.20	7.9-9.0	<2	Low-------	0.49			
	18	---	---	---	---	---	---	----------	----			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
139*:												
Cabin-----------	0-6	15-22	1.20-1.30	0.6-2.0	0.16-0.19	6.1-7.3	<2	Low-------	0.28	3	5	2-4
	6-15	20-27	1.30-1.40	0.6-2.0	0.15-0.17	6.1-7.3	<2	Moderate	0.32			
	15-22	20-27	1.30-1.40	0.6-2.0	0.10-0.14	6.1-7.3	<2	Low-------	0.24			
	22-60	2-8	1.50-1.60	6.0-20	0.03-0.05	6.6-7.8	<2	Low-------	0.05			
Herbman---------	0-5	10-18	1.25-1.35	2.0-6.0	0.05-0.08	6.6-7.3	<2	Low-------	0.05	1	8	2-3
	5-15	10-18	1.30-1.40	2.0-6.0	0.05-0.08	6.6-7.3	<2	Low-------	0.05			
	15	---	---	---	---	---	---	----------	----			
140*:												
Cadoma----------	0-5	35-40	1.05-1.15	0.06-0.2	0.16-0.18	7.9-9.0	<4	Moderate	0.32	2	4L	1-3
	5-22	35-60	1.15-1.30	0.06-0.2	0.14-0.18	>8.4	4-8	High------	0.43			
	22-36	35-50	1.20-1.40	0.06-0.2	0.13-0.17	7.9-9.0	4-16	High------	0.43			
	36	---	---	---	---	---	---	----------	----			
Renohill--------	0-3	27-35	1.15-1.25	0.2-0.6	0.17-0.21	6.6-7.8	<2	Moderate	0.32	2	6	1-2
	3-10	35-50	1.20-1.30	0.06-0.2	0.15-0.19	6.6-7.8	<2	High------	0.37			
	10-29	35-50	1.25-1.35	0.06-0.2	0.15-0.19	7.9-9.0	2-4	High------	0.37			
	29	---	---	---	---	---	---	----------	----			
Samday----------	0-4	30-40	1.05-1.15	0.2-0.6	0.17-0.19	7.9-9.0	<2	Moderate	0.37	1	4L	1-2
	4-13	35-50	1.15-1.25	0.06-0.2	0.14-0.18	7.9-9.0	<4	High------	0.32			
	13	---	---	---	---	---	---	----------	----			
141-------------- Cambria	0-4	20-27	1.15-1.25	0.6-2.0	0.14-0.17	7.4-7.8	<2	Low-------	0.32	5	5	1-2
	4-8	28-35	1.20-1.30	0.6-2.0	0.19-0.21	7.4-8.4	<2	Moderate	0.37			
	8-30	28-35	1.20-1.30	0.6-2.0	0.17-0.20	7.9-9.0	<2	Moderate	0.37			
	30-60	20-30	1.25-1.35	0.6-2.0	0.17-0.20	7.9-9.0	<2	Low-------	0.37			
142*:												
Cambria---------	0-1	15-20	1.30-1.40	2.0-6.0	0.14-0.16	7.4-8.4	<2	Low-------	0.32	5	3	1-2
	1-8	20-35	1.25-1.40	0.6-2.0	0.16-0.19	7.4-8.4	<2	Low-------	0.37			
	8-60	18-30	1.25-1.40	0.6-2.0	0.16-0.19	7.9-9.0	<2	Low-------	0.37			
Zigweid---------	0-3	18-27	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low-------	0.32	5	4L	1-2
	3-12	20-35	1.20-1.30	0.6-2.0	0.16-0.21	7.9-8.4	<2	Moderate	0.37			
	12-60	20-35	1.25-1.35	0.6-2.0	0.16-0.21	7.9-9.0	<2	Moderate	0.37			
143*:												
Cambria---------	0-2	20-27	1.15-1.25	0.6-2.0	0.14-0.17	7.4-7.8	<2	Low-------	0.32	5	5	1-2
	2-7	28-35	1.20-1.30	0.6-2.0	0.19-0.21	7.4-8.4	<2	Moderate	0.37			
	7-25	28-35	1.20-1.30	0.6-2.0	0.17-0.20	7.9-9.0	<2	Moderate	0.37			
	25-60	20-30	1.25-1.35	0.6-2.0	0.17-0.20	7.9-9.0	<2	Low-------	0.37			
Zigweid---------	0-4	28-35	1.15-1.25	0.6-2.0	0.18-0.21	7.4-8.4	<2	Moderate	0.32	5	4L	1-2
	4-10	20-35	1.20-1.30	0.6-2.0	0.16-0.21	7.9-8.4	<2	Moderate	0.37			
	10-60	20-35	1.25-1.35	0.6-2.0	0.16-0.21	7.9-9.0	<2	Moderate	0.37			
144*:												
Castner---------	0-3	15-25	1.10-1.20	2.0-6.0	0.11-0.14	7.4-8.4	<2	Low-------	0.20	1	7	2-3
	3-11	15-25	1.20-1.30	2.0-6.0	0.05-0.09	7.9-8.4	<2	Low-------	0.15			
	11	---	---	---	---	---	---	----------	----			
Chincap---------	0-1	8-18	1.25-1.35	2.0-6.0	0.13-0.15	6.6-7.8	<2	Low-------	0.28	2	3	2-4
	1-9	8-18	1.35-1.45	2.0-6.0	0.13-0.15	6.6-7.8	<2	Low-------	0.32			
	9-23	8-18	1.35-1.45	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low-------	0.32			
	23	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
145*:												
Castner---------	0-2	15-25	1.10-1.20	2.0-6.0	0.11-0.14	7.4-8.4	<2	Low-------	0.20	1	7	2-3
	2-14	15-25	1.20-1.30	2.0-6.0	0.05-0.09	7.9-8.4	<2	Low-------	0.15			
	14	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
146-------------- Cavegulch	0-1	20-27	1.10-1.20	0.2-0.6	0.17-0.20	7.9-9.0	<2	Moderate	0.37	5	4L	1-2
	1-8	25-35	1.20-1.30	0.2-0.6	0.15-0.20	7.9-9.0	2-4	Moderate	0.43			
	8-36	25-35	1.20-1.30	0.2-0.6	0.08-0.15	7.9-9.0	4-12	Moderate	0.49			
	36-60	25-35	1.20-1.30	0.2-0.6	0.08-0.10	7.9-9.0	8-16	Moderate	0.49			
147*:												
Cavegulch-------	0-4	20-27	1.10-1.20	0.2-0.6	0.17-0.20	7.9-9.0	<2	Moderate	0.37	5	4L	1-2
	4-11	25-35	1.20-1.30	0.2-0.6	0.15-0.20	7.9-9.0	2-4	Moderate	0.43			
	11-36	25-35	1.20-1.30	0.2-0.6	0.08-0.15	7.9-9.0	4-12	Moderate	0.49			
	36-60	25-35	1.20-1.30	0.2-0.6	0.08-0.10	7.9-9.0	8-16	Moderate	0.49			
Brokenhorn------	0-4	28-40	1.15-1.25	0.2-0.6	0.19-0.21	7.9-8.4	<2	Moderate	0.32	5	4L	1-3
	4-37	35-50	1.20-1.30	0.06-0.2	0.15-0.20	7.9-9.0	2-4	High------	0.43			
	37-60	35-50	1.20-1.30	0.06-0.2	0.12-0.15	7.9-9.0	4-8	High------	0.43			
148-------------- Chalkcreek	0-4	20-27	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low-------	0.37	5	4L	1-2
	4-11	20-30	1.25-1.35	0.6-2.0	0.15-0.20	7.4-8.4	<2	Moderate	0.43			
	11-60	20-30	1.25-1.35	0.6-2.0	0.15-0.20	7.9-8.4	<2	Moderate	0.49			
149*:												
Chipendale------	0-2	30-35	1.15-1.25	0.2-0.6	0.15-0.20	7.4-8.4	2-4	Moderate	0.32	5	4	1-3
	2-17	35-50	1.20-1.30	0.06-0.2	0.12-0.15	7.4-8.4	4-8	High------	0.37			
	17-60	35-50	1.20-1.30	0.06-0.2	0.08-0.10	7.4-8.4	8-16	High------	0.43			
Chipenhill------	0-1	35-40	1.10-1.20	0.06-0.2	0.15-0.20	7.4-9.0	2-4	High------	0.43	1	4	<1
	1-17	35-50	1.20-1.30	0.06-0.2	0.08-0.10	7.4-9.0	4-16	High------	0.49			
	17	---	---	---	---	---	---	----------	----			
150*:												
Chipendale------	0-1	30-35	1.15-1.25	0.2-0.6	0.15-0.20	7.4-8.4	2-4	Moderate	0.32	5	4	1-3
	1-30	35-50	1.20-1.30	0.06-0.2	0.12-0.15	7.4-8.4	4-8	High------	0.37			
	30-60	35-50	1.20-1.30	0.06-0.2	0.08-0.10	7.4-8.4	8-16	High------	0.43			
Razsun----------	0-3	30-40	1.15-1.25	0.2-0.6	0.19-0.21	7.9-8.4	<2	Moderate	0.32	2	4L	2-3
	3-11	35-45	1.20-1.30	0.06-0.2	0.15-0.20	7.9-8.4	<4	High------	0.37			
	11-21	35-45	1.20-1.30	0.06-0.2	0.12-0.15	7.4-8.4	2-8	High------	0.37			
	21	---	---	---	---	---	---	----------	----			
151-------------- Chipenhill	0-3	35-40	1.10-1.20	0.06-0.2	0.09-0.14	7.4-9.0	2-4	High------	0.20	1	8	<1
	3-11	35-50	1.20-1.30	0.06-0.2	0.08-0.10	7.4-9.0	4-16	High------	0.49			
	11	---	---	---	---	---	---	----------	----			
152*:												
Chipenhill------	0-1	35-40	1.10-1.20	0.06-0.2	0.15-0.20	7.4-9.0	2-4	High------	0.43	1	4	<1
	1-11	35-50	1.20-1.30	0.06-0.2	0.08-0.10	7.4-9.0	4-16	High------	0.49			
	11	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
153*:												
Chittum---------	0-2	20-30	1.20-1.30	0.6-2.0	0.16-0.17	6.6-7.3	<2	Moderate	0.28	1	5	2-3
	2-12	18-35	1.30-1.50	0.6-2.0	0.12-0.14	6.6-7.3	<2	Low-------	0.24			
	12-18	25-35	1.30-1.50	0.6-2.0	0.14-0.16	6.6-7.3	<2	Moderate	0.28			
	18	---	---	---	---	---	---	----------	----			
Nielsen---------	0-2	15-27	1.20-1.30	0.6-2.0	0.09-0.12	6.6-7.3	<2	Low-------	0.10	1	8	2-3
	2-12	20-32	1.20-1.30	0.6-2.0	0.08-0.13	6.6-7.3	<2	Low-------	0.10			
	12	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
154*:												
Chittum---------	0-3	20-30	1.20-1.30	0.6-2.0	0.16-0.17	6.6-7.3	<2	Moderate	0.28	1	5	2-3
	3-9	18-35	1.30-1.50	0.6-2.0	0.12-0.14	6.6-7.3	<2	Low-------	0.24			
	9-14	25-35	1.30-1.50	0.6-2.0	0.14-0.16	6.6-7.3	<2	Moderate	0.28			
	14	---	---	---	---	---	---	----------	----			
Sneffels--------	0-11	20-27	1.15-1.25	0.6-2.0	0.16-0.19	6.1-7.3	<2	Low-------	0.28	2	5	3-5
	11-27	35-45	1.25-1.35	0.06-0.2	0.14-0.17	6.6-7.8	<2	High------	0.32			
	27	---	---	---	---	---	---	----------	----			
155-------------- Clarkelen	0-6	10-18	1.30-1.40	2.0-6.0	0.10-0.12	7.4-8.4	<2	Low-------	0.28	5	3	1-2
	6-49	10-18	1.40-1.50	2.0-6.0	0.07-0.10	7.9-9.0	<4	Low-------	0.32			
	49-60	0-5	1.25-1.35	6.0-20	0.03-0.05	7.9-9.0	<4	Low-------	0.02			
156*:												
Clayburn--------	0-11	15-25	1.25-1.40	0.6-2.0	0.14-0.17	6.1-7.3	<2	Low-------	0.28	5	5	2-4
	11-39	27-35	1.30-1.50	0.6-2.0	0.17-0.21	6.1-7.3	<2	Moderate	0.28			
	39-60	15-25	1.25-1.45	0.6-2.0	0.16-0.19	6.1-7.3	<2	Low-------	0.24			
Moslander-------	0-8	15-25	1.15-1.25	0.6-2.0	0.13-0.17	7.4-8.4	<4	Low-------	0.28	5	6	2-4
	8-26	25-32	1.25-1.35	0.6-2.0	0.14-0.19	7.4-9.0	<4	Moderate	0.37			
	26-60	25-32	1.25-1.35	0.6-2.0	0.09-0.14	7.9-9.0	2-8	Moderate	0.37			
157*:												
Coalmont--------	0-3	15-25	1.25-1.35	0.6-2.0	0.16-0.18	7.4-7.8	<2	Low-------	0.28	2	5	1-2
	3-17	35-50	1.25-1.35	0.06-0.2	0.16-0.19	7.4-8.4	<2	High------	0.32			
	17-33	28-40	1.25-1.35	0.2-0.6	0.16-0.19	7.9-8.4	<2	Moderate	0.37			
	33	---	---	---	---	---	---	----------	----			
Milren----------	0-2	15-25	1.25-1.35	0.6-2.0	0.16-0.18	6.6-7.8	<2	Low-------	0.32	5	5	1-2
	2-19	35-50	1.25-1.35	0.06-0.2	0.15-0.17	7.4-8.4	<2	High------	0.37			
	19-24	26-35	1.25-1.35	0.6-2.0	0.14-0.16	7.9-8.4	<2	Moderate	0.37			
	24-60	20-27	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	<2	Low-------	0.37			
Cragosen--------	0-2	15-25	1.15-1.30	0.6-2.0	0.14-0.16	7.4-8.4	<2	Low-------	0.20	1	7	1-2
	2-14	15-25	1.25-1.45	0.6-2.0	0.06-0.08	7.9-9.0	<2	Low-------	0.05			
	14	---	---	---	---	---	---	----------	----			
158-------------- Connerton	0-7	18-25	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<4	Low-------	0.43	5	4L	1-2
	7-26	27-35	1.15-1.25	0.6-2.0	0.16-0.18	8.5-9.0	<4	Moderate	0.37			
	26-42	24-35	1.30-1.40	0.6-2.0	0.16-0.18	8.5-9.0	<4	Moderate	0.37			
	42-60	20-30	1.35-1.45	0.6-2.0	0.12-0.15	7.9-9.0	<4	Moderate	0.32			
159-------------- Copeman	0-3	20-27	1.20-1.30	0.6-2.0	0.15-0.18	7.9-8.4	<2	Low-------	0.37	2	4L	1-2
	3-15	22-27	1.20-1.30	0.6-2.0	0.14-0.17	7.9-8.4	<2	Low-------	0.37			
	15-42	22-27	1.30-1.40	0.6-2.0	0.11-0.14	7.9-9.0	<4	Low-------	0.28			
	42-60	22-27	1.30-1.40	0.6-2.0	0.07-0.10	7.9-9.0	<4	Low-------	0.15			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
160--------------	0-2	20-27	1.15-1.25	0.6-2.0	0.10-0.14	7.4-8.4	<2	Low--------	0.15	1	7	1-2
Crago	2-9	20-35	1.25-1.35	0.6-2.0	0.05-0.06	7.9-8.4	<2	Low--------	0.05			
	9-60	20-35	1.25-1.35	0.6-2.0	0.05-0.06	7.9-9.0	<4	Low--------	0.05			
161*:												
Crago-----------	0-3	20-27	1.15-1.25	0.6-2.0	0.05-0.07	7.4-8.4	<2	Low--------	0.10	1	8	1-2
	3-10	20-35	1.25-1.35	0.6-2.0	0.05-0.06	7.9-8.4	<2	Low--------	0.05			
	10-60	20-35	1.25-1.35	0.6-2.0	0.05-0.06	7.9-9.0	<4	Low--------	0.05			
Pensore---------	0-2	20-25	1.15-1.25	0.6-2.0	0.04-0.06	7.9-8.4	<2	Low--------	0.10	1	8	1-2
	2-10	20-25	1.25-1.35	0.6-2.0	0.04-0.06	7.9-8.4	<2	Low--------	0.10			
	10	---	---	---	---	---	---	----------	----			
162--------------	0-3	15-25	1.15-1.30	0.6-2.0	0.14-0.16	7.4-8.4	<2	Low--------	0.20	1	7	1-2
Cragosen	3-16	15-25	1.25-1.45	0.6-2.0	0.06-0.08	7.9-9.0	<2	Low--------	0.05			
	16	---	---	---	---	---	---	----------	----			
163*:												
Cragosen---------	0-4	10-20	1.15-1.25	2.0-6.0	0.09-0.11	7.4-8.4	<2	Low--------	0.10	1	8	1-2
	4-12	15-25	1.25-1.45	0.6-2.0	0.06-0.08	7.9-9.0	<2	Low--------	0.05			
	12	---	---	---	---	---	---	----------	----			
Chalkcreek------	0-4	20-27	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low--------	0.37	5	4L	1-2
	4-14	20-30	1.25-1.35	0.6-2.0	0.15-0.20	7.4-8.4	<2	Moderate	0.43			
	14-60	20-30	1.25-1.35	0.6-2.0	0.15-0.20	7.9-8.4	<2	Moderate	0.49			
164*:												
Cragosen Variant	0-2	8-18	1.25-1.35	2.0-6.0	0.03-0.06	7.9-8.4	<2	Low--------	0.05	1	8	1-2
	2-10	8-18	1.35-1.45	2.0-6.0	0.03-0.06	7.9-9.0	<2	Low--------	0.05			
	10	---	---	---	---	---	---	----------	----			
Brownsto Variant	0-2	10-18	1.25-1.35	2.0-6.0	0.06-0.09	7.4-8.4	<2	Low--------	0.10	1	8	1-2
	2-9	10-18	1.35-1.45	2.0-6.0	0.06-0.09	7.4-8.4	<2	Low--------	0.15			
	9-23	10-18	1.35-1.45	2.0-6.0	0.03-0.06	8.5-9.0	<2	Low--------	0.05			
	23-30	2-8	1.45-1.55	6.0-20	0.03-0.04	>8.4	<2	Low--------	0.05			
	30	---	---	---	---	---	---	----------	----			
165--------------	0-8	18-25	1.35-1.45	0.6-6.0	0.09-0.11	6.6-7.3	<2	Low--------	0.10	5	8	2-4
Curecanti	8-18	23-35	1.40-1.50	0.6-2.0	0.07-0.10	6.6-7.8	<2	Moderate	0.15			
	18-60	20-30	1.40-1.50	0.6-2.0	0.06-0.09	6.6-7.8	<2	Moderate	0.15			
166--------------	0-8	20-27	1.15-1.25	0.6-2.0	0.04-0.06	7.4-7.8	<2	Moderate	0.10	2	8	2-4
Curecanti	8-21	20-35	1.25-1.35	0.6-2.0	0.04-0.07	7.9-8.4	<2	Moderate	0.10			
Variant	21-25	30-40	1.25-1.35	0.6-2.0	0.19-0.21	7.9-8.4	<2	Moderate	0.37			
	25	---	---	---	---	---	---	----------	----			
167*:												
Cushman---------	0-3	5-15	1.25-1.35	2.0-6.0	0.13-0.14	6.6-7.8	<2	Low--------	0.32	2	3	1-2
	3-13	20-35	1.25-1.35	0.6-2.0	0.17-0.20	7.4-8.4	<2	Moderate	0.37			
	13-24	20-35	1.25-1.35	0.6-2.0	0.17-0.20	7.9-9.0	<2	Moderate	0.37			
	24	---	---	---	---	---	---	----------	----			
Forkwood--------	0-3	12-25	1.15-1.25	0.6-2.0	0.15-0.17	6.6-7.8	<2	Low--------	0.32	5	5	2-3
	3-22	25-35	1.25-1.35	0.6-2.0	0.19-0.21	6.6-8.4	<2	Moderate	0.37			
	22-60	20-32	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	<2	Low--------	0.37			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
168*:												
Cushool----------	0-2	5-12	1.25-1.35	2.0-6.0	0.11-0.13	7.4-7.8	<2	Low-------	0.24	3	3	1-2
	2-14	20-30	1.25-1.35	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.28			
	14-29	10-20	1.30-1.40	0.6-2.0	0.11-0.13	7.9-9.0	2-4	Low-------	0.28			
	29	---	---	---	---	---	---	----------	----			
Worfstone-------	0-3	8-18	1.25-1.35	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low-------	0.20	1	3	1-2
	3-8	20-30	1.25-1.35	0.6-2.0	0.09-0.15	7.4-8.4	<2	Moderate	0.24			
	8-12	20-30	1.25-1.35	0.6-2.0	0.04-0.09	7.4-8.4	<2	Moderate	0.10			
	12-15	10-20	1.35-1.45	2.0-6.0	0.02-0.03	7.9-9.0	<2	Low-------	0.05			
	15	---	---	---	---	---	---	----------	----			
169*:												
Decross---------	0-8	15-25	1.15-1.25	0.6-2.0	0.16-0.18	6.1-7.3	<2	Moderate	0.32	5	5	2-3
	8-24	25-35	1.25-1.35	0.6-2.0	0.19-0.21	6.6-7.8	<2	Moderate	0.37			
	24-60	20-30	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	<2	Low-------	0.43			
Woosley---------	0-6	18-27	1.10-1.25	0.6-2.0	0.16-0.18	6.6-7.8	<2	Low-------	0.37	2	6	2-3
	6-17	28-35	1.20-1.30	0.6-2.0	0.19-0.21	7.4-7.8	<2	Moderate	0.43			
	17-23	18-30	1.25-1.35	0.6-2.0	0.16-0.18	7.9-8.4	<2	Low-------	0.28			
	23	---	---	---	---	---	---	----------	----			
170*:												
Delphill--------	0-8	18-27	1.15-1.25	0.6-2.0	0.16-0.20	7.9-8.4	<2	Low-------	0.32	3	4L	.5-1
	8-26	18-27	1.20-1.30	0.6-2.0	0.16-0.19	7.9-9.0	<2	Low-------	0.37			
	26	---	---	---	---	---	---	----------	----			
Blazon----------	0-2	18-27	1.15-1.25	0.6-2.0	0.16-0.18	7.4-9.0	2-4	Low-------	0.32	1	4L	.5-1
	2-17	18-32	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	2-4	Low-------	0.37			
	17	---	---	---	---	---	---	----------	----			
171*:												
Delplain--------	0-2	40-45	1.20-1.40	0.2-0.6	0.08-0.09	6.6-7.8	<2	Moderate	0.10	1	6	.5-2
	2-12	35-45	1.30-1.55	0.2-0.6	0.04-0.07	6.6-8.4	<2	Moderate	0.10			
	12	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
172*:												
Diamondville----	0-4	5-15	1.25-1.35	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low-------	0.32	2	3	1-2
	4-18	23-35	1.25-1.35	0.6-2.0	0.16-0.18	7.4-7.8	<2	Moderate	0.49			
	18-24	15-25	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	<2	Low-------	0.49			
	24	---	---	---	---	---	---	----------	----			
Worfman---------	0-2	15-25	1.20-1.30	0.6-2.0	0.15-0.17	6.6-7.8	<2	Low-------	0.32	1	5	1-2
	2-9	20-34	1.20-1.30	0.6-2.0	0.15-0.19	6.6-7.8	<2	Moderate	0.32			
	9-16	20-30	1.20-1.30	0.6-2.0	0.15-0.19	7.9-9.0	<2	Low-------	0.32			
	16	---	---	---	---	---	---	----------	----			
173--------------	0-2	20-27	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low-------	0.32	5	4L	1-2
Docpar	2-18	24-35	1.25-1.35	0.6-2.0	0.17-0.20	7.9-8.4	<2	Low-------	0.32			
	18-30	24-35	1.25-1.35	0.6-2.0	0.15-0.18	7.9-9.0	<2	Low-------	0.32			
	30-60	12-20	1.35-1.45	2.0-6.0	0.11-0.14	7.9-9.0	<4	Low-------	0.28			
174--------------	0-3	2-10	1.35-1.45	6.0-20	0.07-0.09	7.4-8.4	2-4	Low-------	0.20	5	2	.5-1
Draknab	3-60	2-10	1.40-1.50	6.0-20	0.06-0.09	7.9-9.0	2-4	Low-------	0.15			
175:												
Dune land.												

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
176*:												
Edlin	0-3	10-18	1.25-1.35	2.0-6.0	0.12-0.14	7.4-7.8	<2	Low	0.32	5	3	1-2
	3-15	10-18	1.35-1.45	2.0-6.0	0.12-0.14	7.4-8.4	<2	Low	0.37			
	15-60	10-18	1.35-1.45	2.0-6.0	0.12-0.14	7.9-9.0	<4	Low	0.37			
Rock River	0-4	10-20	1.30-1.40	2.0-6.0	0.11-0.14	6.6-7.8	<2	Low	0.24	5	3	1-2
	4-20	18-27	1.35-1.45	0.6-2.0	0.14-0.16	7.4-7.8	<2	Low	0.32			
	20-32	10-20	1.35-1.45	2.0-6.0	0.10-0.13	7.9-8.4	<4	Low	0.24			
	32-60	8-18	1.35-1.45	2.0-6.0	0.08-0.11	7.9-9.0	<2	Low	0.15			
Bosler	0-2	10-20	1.25-1.35	2.0-6.0	0.13-0.15	6.6-7.8	<2	Low	0.28	2	3	.5-1
	2-10	20-30	1.25-1.45	0.6-2.0	0.14-0.16	7.4-7.8	<2	Moderate	0.32			
	10-20	18-27	1.25-1.40	0.6-2.0	0.17-0.20	7.9-9.0	<2	Moderate	0.32			
	20-60	0-5	1.40-1.60	6.0-20	0.02-0.04	7.9-9.0	<2	Low	0.05			
177*:												
Edlin	0-3	10-18	1.25-1.35	2.0-6.0	0.12-0.14	7.4-7.8	<2	Low	0.32	5	3	1-2
	3-16	10-18	1.35-1.45	2.0-6.0	0.12-0.14	7.4-8.4	<2	Low	0.37			
	16-60	10-18	1.35-1.45	2.0-6.0	0.12-0.14	7.9-9.0	<4	Low	0.37			
Ryan Park	0-2	5-15	1.25-1.35	2.0-6.0	0.11-0.13	7.4-7.8	<2	Low	0.28	5	3	1-2
	2-12	8-18	1.35-1.45	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low	0.32			
	12-36	7-15	1.35-1.45	2.0-6.0	0.11-0.13	7.9-9.0	<2	Low	0.32			
	36-60	3-10	1.40-1.50	2.0-6.0	0.07-0.11	7.9-9.0	<2	Low	0.24			
178*:												
Effington	0-2	28-35	1.15-1.25	0.2-0.6	0.12-0.14	7.9-9.0	2-8	Moderate	0.37	5	4L	<1
	2-18	35-45	1.20-1.30	<0.06	0.08-0.10	>9.0	4-16	High	0.37			
	18-60	25-35	1.25-1.40	0.2-0.6	0.08-0.10	>8.4	8-16	Moderate	0.43			
Uffens	0-4	10-18	1.25-1.35	2.0-6.0	0.11-0.13	7.9-8.4	<2	Low	0.28	5	3	.5-1
	4-16	22-35	1.25-1.35	0.2-0.6	0.08-0.12	>8.4	<4	Moderate	0.37			
	16-60	18-27	1.25-1.35	0.2-0.6	0.08-0.12	>8.4	4-8	Low	0.37			
179*:												
Enos	0-2	0-10	1.35-1.45	6.0-20	0.05-0.09	6.6-7.8	<2	Low	0.24	2	2	<.5
	2-15	8-18	1.35-1.45	2.0-6.0	0.09-0.12	6.6-7.8	<2	Low	0.32			
	15-34	4-12	1.40-1.50	2.0-6.0	0.05-0.10	7.9-9.0	<2	Low	0.20			
	34	---	---	---	---	---	---	----------	----			
Wallson	0-2	5-10	1.35-1.45	6.0-20	0.08-0.11	6.6-7.8	<2	Low	0.17	5	2	.3-.5
	2-14	10-18	1.35-1.45	2.0-6.0	0.12-0.14	7.4-8.4	<2	Low	0.24			
	14-48	8-15	1.35-1.45	2.0-6.0	0.10-0.13	7.4-9.0	<2	Low	0.28			
	48-60	3-12	1.45-1.55	2.0-6.0	0.06-0.09	7.4-9.0	<2	Low	0.24			
180*:												
Farlow	0-3	20-27	1.15-1.25	0.6-2.0	0.03-0.06	6.6-7.8	<2	Low	0.05	1	8	2-4
	3-14	20-27	1.25-1.35	0.6-2.0	0.03-0.06	7.4-8.4	<2	Low	0.05			
	14-60	20-27	1.25-1.35	0.6-2.0	0.03-0.06	7.9-9.0	<2	Low	0.05			
Starley	0-7	20-27	1.15-1.25	0.6-2.0	0.07-0.10	6.6-8.4	<2	Low	0.10	1	8	2-3
	7-9	20-30	1.25-1.30	0.6-2.0	0.07-0.10	7.9-9.0	<2	Low	0.10			
	9	---	---	---	---	---	---	----------	----			
Rock outcrop	0-60	---	---	---	---	---	<2	----------	----	---	---	---

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea-bility	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodi-bility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
181*:												
Farlow----------	0-8	18-27	1.15-1.25	0.6-2.0	0.10-0.12	6.6-8.4	<2	Low-------	0.17	1	7	2-4
	8-17	20-35	1.25-1.35	0.6-2.0	0.07-0.10	7.9-9.0	<2	Low-------	0.15			
	17-50	20-35	1.25-1.35	0.6-2.0	0.05-0.07	7.9-9.0	<2	Low-------	0.10			
	50	---	---	---	---	---	---	----------	----			
Starley---------	0-4	20-27	1.15-1.25	0.6-2.0	0.07-0.10	6.6-8.4	<2	Low-------	0.10	1	8	2-3
	4-14	20-30	1.25-1.30	0.6-2.0	0.07-0.10	7.9-9.0	<2	Low-------	0.10			
	14	---	---	---	---	---	---	----------	----			
182*:												
Fiveoh----------	0-5	10-18	1.15-1.25	0.6-2.0	0.14-0.16	7.9-8.4	<2	Low-------	0.32	5	4L	1-2
	5-28	12-18	1.25-1.35	0.6-2.0	0.13-0.16	7.9-9.0	<2	Low-------	0.32			
	28-60	12-18	1.25-1.35	0.6-2.0	0.13-0.16	7.9-9.0	<2	Low-------	0.37			
Thermopolis-----	0-5	18-27	1.20-1.30	0.6-2.0	0.14-0.18	7.9-8.4	<2	Low-------	0.32	1	5	1-2
	5-16	18-27	1.25-1.35	0.6-2.0	0.13-0.18	7.9-9.0	<2	Low-------	0.32			
	16	---	---	---	---	---	---	----------	----			
183--------------	0-5	15-25	1.15-1.35	0.6-2.0	0.16-0.20	6.6-7.8	<2	Low-------	0.32	5	6	1-2
Forelle	5-20	20-35	1.30-1.50	0.6-2.0	0.15-0.18	6.6-7.8	<2	Moderate	0.32			
	20-60	18-30	1.30-1.55	0.6-2.0	0.16-0.19	7.9-9.0	<2	Low-------	0.37			
184*:												
Forelle---------	0-3	15-25	1.15-1.35	0.6-2.0	0.16-0.20	6.6-7.8	<2	Low-------	0.32	5	6	1-2
	3-19	20-35	1.30-1.50	0.6-2.0	0.15-0.18	6.6-7.8	<2	Moderate	0.32			
	19-60	18-30	1.30-1.55	0.6-2.0	0.16-0.19	7.9-9.0	<2	Low-------	0.37			
Diamondville----	0-3	5-15	1.25-1.35	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low-------	0.32	2	3	1-2
	3-20	23-35	1.25-1.35	0.6-2.0	0.16-0.18	7.4-7.8	<2	Moderate	0.49			
	20-26	15-25	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	<2	Low-------	0.49			
	26	---	---	---	---	---	---	----------	----			
185*:												
Forelle---------	0-3	15-25	1.15-1.35	0.6-2.0	0.16-0.20	6.6-7.8	<2	Low-------	0.32	5	6	1-2
	3-13	20-35	1.30-1.50	0.6-2.0	0.15-0.18	6.6-7.8	<2	Moderate	0.32			
	13-60	18-30	1.30-1.55	0.6-2.0	0.16-0.19	7.9-9.0	<2	Low-------	0.37			
Lupinto---------	0-3	18-25	1.15-1.25	0.6-2.0	0.12-0.14	7.4-8.4	<2	Low-------	0.24	1	7	1-3
	3-10	28-35	1.25-1.35	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.28			
	10-60	20-27	1.25-1.35	0.6-2.0	0.08-0.11	7.9-9.0	<4	Low-------	0.10			
186*:												
Forkwood--------	0-7	12-25	1.15-1.25	0.6-2.0	0.15-0.17	6.6-7.8	<2	Low-------	0.32	5	5	2-3
	7-24	25-35	1.25-1.35	0.6-2.0	0.19-0.21	6.6-8.4	<2	Moderate	0.37			
	24-60	20-32	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	<2	Low-------	0.37			
Keyner----------	0-3	20-27	1.15-1.25	0.6-2.0	0.15-0.18	7.4-8.4	<2	Low-------	0.32	5	6	.5-2
	3-14	20-35	1.25-1.35	0.06-0.2	0.15-0.20	7.9-9.0	<2	Moderate	0.37			
	14-23	20-35	1.25-1.35	0.06-0.2	0.12-0.15	>9.0	2-8	Moderate	0.37			
	23-60	15-25	1.30-1.40	0.2-0.6	0.11-0.13	>8.4	4-16	Low-------	0.37			
187*:												
Forkwood--------	0-2	12-25	1.15-1.25	0.6-2.0	0.15-0.17	6.6-7.8	<2	Low-------	0.32	5	5	2-3
	2-13	25-35	1.25-1.35	0.6-2.0	0.19-0.21	6.6-8.4	<2	Moderate	0.37			
	13-60	20-32	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	<2	Low-------	0.37			
Ulm-------------	0-2	28-35	1.15-1.25	0.6-2.0	0.17-0.21	6.6-7.8	<2	Moderate	0.32	5	6	1-3
	2-16	35-50	1.20-1.30	0.06-0.2	0.17-0.21	6.6-8.4	<2	High------	0.37			
	16-60	30-42	1.20-1.30	0.2-0.6	0.17-0.21	7.9-9.0	<2	High------	0.37			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
188*:												
Forkwood--------	0-4	12-20	1.25-1.35	2.0-6.0	0.13-0.15	6.6-7.8	<2	Low-------	0.28	5	3	2-3
	4-22	25-35	1.25-1.35	0.6-2.0	0.19-0.21	6.6-8.4	<2	Moderate	0.37			
	22-60	20-32	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	<2	Low-------	0.37			
Zigweid---------	0-3	18-27	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low-------	0.32	5	4L	1-2
	3-19	20-35	1.20-1.30	0.6-2.0	0.16-0.21	7.9-8.4	<2	Moderate	0.37			
	19-60	20-35	1.25-1.35	0.6-2.0	0.16-0.21	7.9-9.0	<2	Moderate	0.37			
189*:												
Gateridge-------	0-5	10-20	1.20-1.30	2.0-6.0	0.13-0.15	6.6-7.3	<2	Low-------	0.32	1	3	1-2
	5-14	20-30	1.20-1.30	0.6-2.0	0.14-0.17	6.6-7.3	<2	Moderate	0.32			
	14-19	40-50	1.10-1.20	0.06-0.2	0.14-0.16	6.6-7.3	<2	High------	0.37			
	19	---	---	---	---	---	---	----------	----			
Taluce Variant--	0-5	10-18	1.25-1.35	2.0-6.0	0.13-0.15	6.6-7.3	<2	Low-------	0.32	1	3	1-2
	5-15	10-18	1.35-1.45	2.0-6.0	0.13-0.15	6.6-7.3	<2	Low-------	0.37			
	15	---	---	---	---	---	---	----------	----			
190-------------- Griffy	0-2	5-15	1.25-1.35	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low-------	0.28	5	3	.5-1
	2-18	20-30	1.25-1.35	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.20			
	18-32	10-20	1.35-1.50	2.0-6.0	0.10-0.12	7.9-9.0	<4	Low-------	0.24			
	32-60	0-10	1.40-1.60	2.0-6.0	0.07-0.12	7.9-9.0	<4	Low-------	0.20			
191*:												
Griffy----------	0-2	5-15	1.25-1.35	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low-------	0.28	5	3	.5-1
	2-21	20-30	1.25-1.35	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.20			
	21-32	10-20	1.35-1.50	2.0-6.0	0.10-0.12	7.9-9.0	<4	Low-------	0.24			
	32-60	0-10	1.40-1.60	2.0-6.0	0.07-0.12	7.9-9.0	<4	Low-------	0.20			
Emblem----------	0-3	15-20	1.20-1.30	0.6-2.0	0.12-0.14	7.9-8.4	<2	Low-------	0.28	3	3	<1
	3-26	20-28	1.25-1.35	0.6-2.0	0.13-0.16	7.9-9.0	<2	Moderate	0.32			
	26-60	0-10	1.15-1.30	6.0-20	0.03-0.05	7.9-9.0	<4	Low-------	0.02			
192*:												
Grimstone-------	0-4	15-22	1.15-1.25	0.6-2.0	0.14-0.18	5.6-6.5	<2	Low-------	0.32	2	5	2-3
	4-16	15-22	1.15-1.25	0.6-2.0	0.14-0.18	5.6-6.5	<2	Low-------	0.32			
	16-26	28-35	1.20-1.30	0.6-2.0	0.17-0.21	5.6-6.5	<2	Moderate	0.32			
	26	---	---	---	---	---	---	----------	----			
Grimstone Variant--------	0-1	15-22	1.15-1.25	0.6-2.0	0.15-0.18	5.6-6.5	<2	Low-------	0.32	2	5	2-3
	1-16	24-35	1.25-1.35	0.6-2.0	0.05-0.08	5.6-6.5	<2	Moderate	0.10			
	16-36	20-32	1.25-1.35	0.6-2.0	0.03-0.05	5.6-6.5	<2	Moderate	0.05			
	36	---	---	---	---	---	---	----------	----			
193-------------- Haverdad	0-6	20-27	1.15-1.25	0.6-2.0	0.14-0.18	7.4-8.4	<2	Low-------	0.32	5	4L	1-2
	6-60	20-35	1.25-1.35	0.6-2.0	0.14-0.20	7.9-9.0	<2	Low-------	0.37			
194*:												
Haverdad--------	0-3	20-27	1.15-1.25	0.6-2.0	0.14-0.18	7.4-8.4	<2	Low-------	0.32	5	4L	1-2
	3-60	20-35	1.25-1.35	0.6-2.0	0.14-0.20	7.9-9.0	<2	Low-------	0.37			
Clarkelen-------	0-6	8-18	1.30-1.40	2.0-6.0	0.13-0.15	7.4-8.4	<2	Low-------	0.28	5	3	1-2
	6-60	8-18	1.25-1.45	2.0-6.0	0.10-0.13	7.9-8.4	<2	Low-------	0.28			
195*:												
Haverdad--------	0-2	20-27	1.15-1.25	0.6-2.0	0.14-0.18	7.9-8.4	2-4	Low-------	0.32	5	4L	<1
	2-60	20-35	1.25-1.35	0.6-2.0	0.11-0.15	7.9-9.0	4-8	Low-------	0.37			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
195*:												
Clarkelen-------	0-2	10-18	1.25-1.35	2.0-6.0	0.11-0.13	7.4-8.4	<4	Low-------	0.32	5	3	1-2
	2-60	10-18	1.35-1.45	2.0-6.0	0.10-0.12	7.9-9.0	4-8	Low-------	0.32			
196-------------- Havermom	0-4	12-20	1.25-1.35	0.6-2.0	0.13-0.15	7.9-9.0	<2	Low-------	0.32	5	3	1-2
	4-60	18-35	1.25-1.35	0.2-0.6	0.13-0.17	>8.4	4-8	Low-------	0.37			
197-------------- Hawkstone	0-5	6-10	1.35-1.45	6.0-20	0.06-0.08	6.6-7.8	<2	Low-------	0.15	5	2	1-2
	5-60	8-17	1.35-1.45	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low-------	0.32			
198*:												
Hazton----------	0-3	15-19	1.25-1.35	2.0-6.0	0.10-0.12	6.1-7.3	<2	Low-------	0.15	1	6	1-2
	3-11	10-18	1.35-1.45	2.0-6.0	0.07-0.09	6.1-7.3	<2	Low-------	0.10			
	11	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
199-------------- Hiland	0-7	3-8	1.30-1.40	6.0-20	0.07-0.09	6.6-7.3	<2	Low-------	0.20	5	2	1-2
	7-25	20-30	1.25-1.35	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.32			
	25-42	10-20	1.30-1.40	2.0-6.0	0.10-0.15	7.9-9.0	<2	Low-------	0.32			
	42-60	5-12	1.35-1.45	2.0-6.0	0.07-0.10	7.9-9.0	<4	Low-------	0.24			
200-------------- Hiland	0-2	6-12	1.35-1.45	6.0-20	0.06-0.08	6.6-7.8	<2	Low-------	0.20	5	2	1-2
	2-7	12-18	1.35-1.45	6.0-20	0.11-0.13	6.6-7.8	<2	Low-------	0.28			
	7-22	20-30	1.25-1.35	0.6-2.0	0.14-0.16	6.6-8.4	<2	Moderate	0.37			
	22-33	8-16	1.40-1.50	2.0-6.0	0.07-0.12	7.4-9.0	<2	Low-------	0.24			
	33-60	6-12	1.40-1.50	2.0-6.0	0.04-0.09	7.9-9.0	<4	Low-------	0.10			
201-------------- Hiland	0-7	8-18	1.25-1.35	2.0-6.0	0.12-0.15	6.6-7.3	<2	Low-------	0.28	5	3	1-2
	7-22	20-30	1.25-1.35	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.32			
	22-27	10-20	1.30-1.40	2.0-6.0	0.10-0.15	7.9-9.0	<2	Low-------	0.32			
	27-60	5-12	1.35-1.45	2.0-6.0	0.07-0.10	7.9-9.0	<4	Low-------	0.24			
202*:												
Inchau----------	0-4	15-27	1.15-1.25	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low-------	0.32	2	5	2-5
	4-21	20-35	1.25-1.40	0.6-2.0	0.14-0.20	6.6-7.3	<2	Moderate	0.37			
	21-30	18-30	1.25-1.40	0.6-2.0	0.14-0.20	6.6-7.3	<2	Moderate	0.37			
	30	---	---	---	---	---	---	----------	----			
Clayburn--------	0-10	15-25	1.25-1.40	0.6-2.0	0.14-0.17	6.1-7.3	<2	Low-------	0.28	5	5	2-4
	10-30	27-35	1.30-1.50	0.6-2.0	0.17-0.21	6.1-7.3	<2	Moderate	0.28			
	30-60	15-25	1.25-1.45	0.6-2.0	0.16-0.19	6.1-7.3	<2	Low-------	0.24			
Chittum---------	0-4	10-20	1.20-1.30	0.6-2.0	0.12-0.14	6.6-7.3	<2	Low-------	0.32	1	7	2-3
	4-12	18-35	1.30-1.50	0.6-2.0	0.12-0.14	6.6-7.3	<2	Low-------	0.24			
	12-19	25-35	1.30-1.50	0.6-2.0	0.14-0.16	6.6-7.3	<2	Moderate	0.28			
	19	---	---	---	---	---	---	----------	----			
203*:												
Inchau----------	0-10	15-27	1.15-1.25	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low-------	0.32	2	5	2-5
	10-26	20-35	1.25-1.40	0.6-2.0	0.14-0.20	6.6-7.3	<2	Moderate	0.37			
	26-32	18-30	1.25-1.40	0.6-2.0	0.14-0.20	6.6-7.3	<2	Moderate	0.37			
	32	---	---	---	---	---	---	----------	----			
Farlow----------	0-8	20-30	1.15-1.25	0.6-2.0	0.12-0.14	6.6-8.4	<2	Low-------	0.15	3	7	2-4
	8-55	20-35	1.25-1.40	0.6-2.0	0.03-0.07	7.9-9.0	<2	Low-------	0.28			
	55	---	---	---	---	---	---	----------	----			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
204-------------- Irson	0-6	18-27	1.15-1.25	0.6-2.0	0.05-0.07	6.6-7.3	<2	Low-------	0.10	1	8	3-5
	6-16	20-27	1.25-1.35	0.6-2.0	0.06-0.09	6.6-7.3	<2	Low-------	0.10			
	16	---	---	---	---	---	---	----------	----			
205*:												
Irson-----------	0-10	20-27	1.15-1.25	0.6-2.0	0.05-0.07	6.6-7.3	<2	Low-------	0.10	1	8	3-5
	10-14	20-27	1.25-1.35	0.6-2.0	0.06-0.09	6.6-7.3	<2	Low-------	0.10			
	14	---	---	---	---	---	---	----------	----			
Kezar-----------	0-4	10-20	1.30-1.40	2.0-6.0	0.08-0.10	6.6-7.3	<2	Low-------	0.20	2	6	2-3
	4-21	20-35	1.30-1.40	0.6-2.0	0.09-0.15	6.6-7.3	<2	Moderate	0.20			
	21-27	20-30	1.30-1.40	0.6-2.0	0.08-0.11	6.6-7.8	<2	Low-------	0.17			
	27	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
206*:												
Irson-----------	0-12	20-27	1.15-1.25	0.6-2.0	0.02-0.03	6.6-7.3	<2	Low-------	0.05	1	8	3-5
	12-18	20-27	1.25-1.35	0.6-2.0	0.03-0.05	6.6-7.3	<2	Low-------	0.05			
	18	---	---	---	---	---	---	----------	----			
Sebud-----------	0-14	20-27	1.15-1.25	0.6-2.0	0.06-0.10	6.6-7.3	<2	Low-------	0.10	1	8	2-3
	14-60	20-27	1.25-1.35	0.6-2.0	0.06-0.10	6.6-7.3	<2	Low-------	0.10			
207*:												
Keeline---------	0-3	5-15	1.25-1.35	2.0-6.0	0.12-0.14	6.6-7.8	<4	Low-------	0.32	5	3	1-2
	3-60	5-18	1.35-1.50	2.0-6.0	0.09-0.14	7.9-9.0	<4	Low-------	0.37			
Taluce----------	0-4	10-18	1.35-1.45	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low-------	0.24	1	3	.5-1
	4-14	10-18	1.30-1.40	2.0-6.0	0.10-0.13	7.9-9.0	<2	Low-------	0.20			
	14	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
208-------------- Keyner	0-3	20-27	1.20-1.30	0.6-2.0	0.14-0.17	7.4-8.4	<2	Moderate	0.32	5	5	.5-2
	3-15	20-35	1.25-1.35	0.06-0.2	0.15-0.20	7.9-9.0	<2	Moderate	0.37			
	15-25	20-35	1.25-1.35	0.06-0.2	0.12-0.15	>9.0	2-8	Moderate	0.37			
	25-60	15-25	1.30-1.40	0.2-0.6	0.11-0.13	>8.4	4-16	Low-------	0.37			
209*:												
Keyner----------	0-1	8-15	1.25-1.35	2.0-6.0	0.12-0.14	7.4-8.4	<2	Low-------	0.28	5	3	.5-2
	1-12	20-35	1.25-1.35	0.06-0.2	0.15-0.20	7.9-9.0	<2	Moderate	0.37			
	12-19	20-35	1.25-1.35	0.06-0.2	0.12-0.15	>9.0	2-8	Moderate	0.37			
	19-60	15-25	1.30-1.40	0.2-0.6	0.11-0.13	>8.4	4-16	Low-------	0.37			
Absted----------	0-3	20-30	1.30-1.40	0.6-2.0	0.12-0.15	6.6-7.8	<2	Moderate	0.32	5	5	1-2
	3-14	35-50	1.30-1.40	0.06-0.2	0.16-0.18	7.9-9.0	<4	High------	0.43			
	14-22	35-50	1.30-1.45	0.06-0.2	0.11-0.13	>8.4	>8	High------	0.43			
	22-60	30-45	1.30-1.45	0.06-0.2	0.11-0.13	7.9-9.0	>8	High------	0.43			
Slickspots.												
210*:												
Keyner----------	0-4	8-15	1.25-1.35	2.0-6.0	0.12-0.14	7.4-8.4	<2	Low-------	0.28	5	3	.5-2
	4-17	20-35	1.25-1.35	0.06-0.2	0.15-0.20	7.9-9.0	<2	Moderate	0.37			
	17-24	20-35	1.25-1.35	0.06-0.2	0.12-0.15	>9.0	2-8	Moderate	0.37			
	24-60	15-25	1.30-1.40	0.2-0.6	0.11-0.13	>8.4	4-16	Low-------	0.37			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors		Wind erodi- bility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
210*:												
Hiland----------	0-2	8-18	1.25-1.35	2.0-6.0	0.12-0.15	6.6-7.3	<2	Low--------	0.28	5	3	1-2
	2-14	20-30	1.25-1.35	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.32			
	14-36	10-20	1.30-1.40	2.0-6.0	0.10-0.15	7.9-9.0	<2	Low--------	0.32			
	36-60	5-12	1.35-1.45	2.0-6.0	0.07-0.10	7.9-9.0	<4	Low--------	0.24			
211*:												
Kezar-----------	0-3	15-25	1.20-1.30	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low--------	0.28	2	6	2-3
	3-15	20-35	1.30-1.40	0.6-2.0	0.09-0.15	6.6-7.3	<2	Moderate	0.20			
	15-24	20-30	1.30-1.40	0.6-2.0	0.08-0.11	6.6-7.8	<2	Low--------	0.17			
	24	---	---	---	---	---	---	----------	----			
Irson-----------	0-7	20-27	1.15-1.25	0.6-2.0	0.05-0.07	6.6-7.3	<2	Low--------	0.10	1	8	3-5
	7-11	20-27	1.25-1.35	0.6-2.0	0.03-0.05	6.6-7.3	<2	Low--------	0.05			
	11	---	---	---	---	---	---	----------	----			
Clayburn--------	0-5	10-20	1.20-1.35	2.0-6.0	0.10-0.13	6.1-7.3	<2	Low--------	0.24	5	3	3-4
	5-34	22-35	1.25-1.40	0.6-2.0	0.12-0.16	6.1-7.3	<2	Moderate	0.28			
	34-60	15-30	1.30-1.45	0.6-2.0	0.11-0.14	6.1-7.3	<2	Low--------	0.20			
212------------- Lander	0-12	18-27	1.15-1.25	0.6-2.0	0.16-0.18	7.9-8.4	<2	Low--------	0.32	5	4L	2-3
	12-36	20-35	1.25-1.35	0.6-2.0	0.16-0.18	7.9-8.4	<2	Moderate	0.37			
	36-60	20-30	1.25-1.35	0.6-2.0	0.08-0.12	7.9-8.4	<2	Moderate	0.20			
213*:												
Leavitt---------	0-3	15-27	1.20-1.30	0.6-2.0	0.14-0.18	6.6-7.8	<2	Low--------	0.32	5	5	2-3
	3-38	20-35	1.20-1.35	0.6-2.0	0.16-0.21	6.6-7.8	<2	Moderate	0.37			
	38-60	15-27	1.25-1.35	0.6-2.0	0.14-0.18	7.9-9.0	<2	Low--------	0.37			
Coutis----------	0-29	12-18	1.25-1.35	2.0-6.0	0.13-0.15	6.6-7.4	<2	Low--------	0.32	5	3	2-3
	29-60	13-18	1.25-1.35	2.0-6.0	0.11-0.15	6.6-7.8	<2	Low--------	0.24			
214*:												
Lolite----------	0-2	35-55	1.10-1.20	0.06-0.2	0.14-0.16	7.4-8.4	<4	High-------	0.37	1	4	1-2
	2-6	35-55	1.10-1.20	0.06-0.2	0.12-0.15	7.4-8.4	<4	High-------	0.43			
	6-10	35-55	1.10-1.20	0.06-0.2	0.04-0.06	7.4-8.4	>8	High-------	0.43			
	10	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
215*:												
Lolite----------	0-2	35-55	1.10-1.20	0.06-0.2	0.14-0.16	7.4-8.4	<4	High-------	0.37	1	4	1-2
	2-12	35-55	1.10-1.20	0.06-0.2	0.12-0.15	7.4-8.4	<4	High-------	0.43			
	12-15	35-55	1.10-1.20	0.06-0.2	0.04-0.06	7.4-8.4	>8	High-------	0.43			
	15	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
216------------- Lonebear	0-1	35-40	1.10-1.20	0.2-0.6	0.15-0.20	7.9-8.4	<2	High-------	0.32	5	4	1-3
	1-12	35-50	1.20-1.30	0.06-0.2	0.14-0.18	7.9-8.4	<2	High-------	0.37			
	12-26	35-50	1.20-1.30	0.06-0.2	0.13-0.17	7.4-8.4	<4	High-------	0.37			
	26-60	35-50	1.20-1.30	0.06-0.2	0.09-0.15	7.4-8.4	2-8	High-------	0.37			
217*:												
Lupinto---------	0-2	18-25	1.15-1.25	0.6-2.0	0.12-0.14	7.4-8.4	<2	Low--------	0.24	1	7	1-3
	2-5	28-35	1.25-1.35	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.28			
	5-48	20-27	1.25-1.35	0.6-2.0	0.08-0.11	7.9-9.0	<4	Low--------	0.10			
	48	---	---	---	---	---	---	----------	----			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
217*:												
Alcova	0-4	8-15	1.25-1.35	2.0-6.0	0.12-0.14	6.6-7.8	<2	Low	0.28	3	3	1-2
	4-16	20-25	1.25-1.35	0.6-2.0	0.11-0.16	7.4-8.4	<2	Moderate	0.24			
	16-30	10-20	1.30-1.40	2.0-6.0	0.06-0.12	7.9-8.4	<2	Low	0.15			
	30-60	0-10	1.45-1.55	6.0-20	0.02-0.04	7.9-9.0	<2	Low	0.05			
218 Lupinto Family	0-2	10-25	1.15-1.35	0.6-6.0	0.03-0.13	6.6-7.8	<2	Low	0.15	1	7	1-2
	2-6	15-30	1.25-1.45	0.6-6.0	0.04-0.10	6.6-7.8	<2	Moderate	0.10			
	6-22	10-25	1.25-1.45	0.6-6.0	0.03-0.09	6.6-9.0	<2	Low	0.10			
	22-60	0-25	1.25-1.55	>0.6	0.03-0.07	6.6-9.0	<2	Low	0.10			
219*:												
McFadden	0-4	8-18	1.30-1.40	2.0-6.0	0.11-0.14	7.4-8.4	<2	Low	0.28	5	3	1-2
	4-18	8-18	1.35-1.45	2.0-6.0	0.11-0.14	7.9-8.4	<2	Low	0.28			
	18-60	8-18	1.35-1.45	2.0-6.0	0.11-0.14	7.9-9.0	<2	Low	0.28			
Edlin	0-2	10-18	1.25-1.35	2.0-6.0	0.12-0.14	7.4-7.8	<2	Low	0.32	5	3	1-2
	2-11	10-18	1.35-1.45	2.0-6.0	0.12-0.14	7.4-8.4	<2	Low	0.37			
	11-60	10-18	1.35-1.45	2.0-6.0	0.12-0.14	7.9-9.0	<4	Low	0.37			
Blackhall	0-2	8-18	1.25-1.35	2.0-6.0	0.10-0.12	7.4-8.4	<2	Low	0.28	1	3	1-2
	2-14	8-18	1.35-1.45	2.0-6.0	0.10-0.14	7.9-9.0	<2	Low	0.37			
	14	---	---	---	---	---	---	----------	----			
220*:												
Middlewood	0-5	28-35	1.15-1.25	0.2-0.6	0.19-0.21	6.6-7.3	<2	Moderate	0.32	1	6	1-2
	5-18	35-50	1.15-1.25	0.2-0.6	0.14-0.16	6.6-7.3	<2	High	0.37			
	18	---	---	---	---	---	---	----------	----			
Kather	0-3	27-40	1.15-1.25	0.2-0.6	0.18-0.20	6.6-7.3	<2	Moderate	0.15	2	5	1-2
	3-24	35-50	1.20-1.30	0.06-0.2	0.14-0.17	6.6-7.3	<2	High	0.20			
	24	---	---	---	---	---	---	----------	----			
221*:												
Milren	0-3	5-15	1.25-1.35	2.0-6.0	0.12-0.14	6.6-7.8	<2	Low	0.32	5	3	1-2
	3-14	40-50	1.25-1.35	0.06-0.2	0.15-0.17	7.4-8.4	<2	High	0.37			
	14-19	26-35	1.25-1.35	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.37			
	19-27	20-27	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	<2	Moderate	0.37			
	27-60	5-15	1.35-1.45	0.6-2.0	0.13-0.15	7.9-9.0	2-4	Low	0.37			
Bosler	0-2	10-20	1.25-1.35	2.0-6.0	0.13-0.15	6.6-7.8	<2	Low	0.28	2	3	.5-1
	2-22	20-30	1.25-1.45	0.6-2.0	0.14-0.16	7.4-7.8	<2	Moderate	0.32			
	22-60	0-5	1.40-1.60	6.0-20	0.02-0.04	7.9-9.0	<2	Low	0.05			
Rock River	0-3	8-18	1.25-1.35	2.0-6.0	0.11-0.14	6.6-7.8	<2	Low	0.24	5	3	.5-2
	3-22	20-35	1.25-1.35	0.6-2.0	0.14-0.18	7.4-8.4	<2	Low	0.24			
	22-60	15-25	1.35-1.45	0.6-2.0	0.10-0.16	7.9-9.0	<2	Low	0.28			
222*:												
Mudray	0-2	30-40	1.15-1.25	0.2-0.6	0.16-0.20	7.9-9.0	2-4	Moderate	0.37	1	4L	1-2
	2-12	40-50	1.20-1.30	<0.06	0.14-0.17	>9.0	4-16	High	0.43			
	12-18	35-45	1.20-1.30	<0.06	0.14-0.17	>9.0	4-16	High	0.43			
	18	---	---	---	---	---	---	----------	----			
Bributte	0-1	35-40	1.10-1.20	0.06-0.2	0.10-0.14	>9.0	2-16	High	0.32	1	4	<1
	1-17	40-60	1.20-1.30	<0.06	0.10-0.14	>9.0	4-16	High	0.37			
	17	---	---	---	---	---	---	----------	----			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
222*:												
Birdsley--------	0-1	18-27	1.25-1.35	<0.06	0.15-0.17	>8.4	<4	Low-------	0.43	1	4L	<.5
	1-18	18-30	1.25-1.35	<0.06	0.15-0.17	>9.0	4-16	Low-------	0.43			
	18	---	---	---	---	---	---	----------	----			
223*:												
Nathrop---------	0-4	15-25	1.20-1.30	0.6-2.0	0.08-0.10	6.6-7.3	<2	Low-------	0.10	1	8	2-3
	4-18	25-35	1.25-1.35	0.6-2.0	0.05-0.10	6.6-7.8	<2	Low-------	0.05			
	18-32	20-30	1.25-1.35	0.6-2.0	0.05-0.10	7.9-8.4	<2	Low-------	0.05			
	32	---	---	---	---	---	---	----------	----			
Starley---------	0-4	20-27	1.15-1.25	0.6-2.0	0.11-0.15	6.6-8.4	<2	Low-------	0.20	1	6	2-3
	4-13	20-30	1.25-1.30	0.6-2.0	0.07-0.10	7.9-9.0	<2	Low-------	0.10			
	13	---	---	---	---	---	---	----------	----			
224*:												
Neldore---------	0-2	40-50	1.15-1.25	0.06-0.2	0.14-0.16	6.1-7.3	<2	High------	0.32	1	4	1-3
	2-16	40-55	1.20-1.30	0.06-0.2	0.14-0.16	6.1-7.3	<2	High------	0.32			
	16	---	---	---	---	---	---	----------	----			
Moyerson--------	0-2	27-35	1.25-1.30	0.2-0.6	0.14-0.16	7.4-8.4	<2	Moderate	0.32	1	4	1-2
	2-13	35-50	1.25-1.30	0.06-0.2	0.14-0.17	7.9-9.0	2-4	High------	0.32			
	13	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
225--------------	0-9	20-27	1.15-1.25	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low-------	0.32	5	6	1-2
Nunnston	9-27	35-45	1.20-1.30	0.06-0.2	0.15-0.19	6.6-7.8	<2	High------	0.37			
	27-60	30-40	1.20-1.30	0.2-0.6	0.16-0.20	7.9-9.0	<2	High------	0.37			
226*:												
Oceanet---------	0-2	5-15	1.25-1.35	2.0-6.0	0.11-0.14	7.9-9.0	<2	Low-------	0.32	1	3	.5-1
	2-14	5-15	1.35-1.50	2.0-6.0	0.11-0.14	7.9-9.0	<2	Low-------	0.37			
	14	---	---	---	---	---	---	----------	----			
Persayo---------	0-1	18-27	1.20-1.30	0.6-2.0	0.15-0.17	7.9-8.4	<4	Moderate	0.37	1	4L	.5-1
	1-16	18-30	1.20-1.30	0.6-2.0	0.14-0.17	7.9-9.0	<4	Low-------	0.28			
	16	---	---	---	---	---	---	----------	----			
227*:												
Orella----------	0-2	27-40	1.15-1.25	0.2-0.6	0.14-0.16	7.9-9.0	2-4	High------	0.37	1	4L	.5-1
	2-10	35-50	1.15-1.25	<0.06	0.10-0.14	>8.4	4-16	High------	0.32			
	10	---	---	---	---	---	---	----------	----			
Cadoma----------	0-4	35-40	1.05-1.15	0.06-0.2	0.16-0.18	7.9-9.0	<4	Moderate	0.32	2	4L	1-3
	4-14	35-60	1.15-1.30	0.06-0.2	0.14-0.18	>8.4	4-8	High------	0.43			
	14-28	35-50	1.20-1.40	0.06-0.2	0.13-0.17	7.9-9.0	4-16	High------	0.43			
	28	---	---	---	---	---	---	----------	----			
Petrie----------	0-5	30-40	1.15-1.25	0.06-0.2	0.19-0.21	7.9-9.0	2-4	Moderate	0.43	5	4	.5-1
	5-60	35-50	1.15-1.25	<0.06	0.14-0.20	>8.4	4-8	High------	0.49			
228*:												
Orella----------	0-2	27-40	1.15-1.25	0.2-0.6	0.14-0.16	7.9-9.0	2-4	High------	0.43	1	4L	.5-1
	2-12	35-50	1.15-1.25	<0.06	0.10-0.14	>8.4	4-16	High------	0.32			
	12	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
229--------------- Orpha	0-2	5-10	1.35-1.45	>20	0.06-0.07	6.6-7.8	<2	Low--------	0.17	5	2	1-2
	2-60	3-8	1.45-1.60	>20	0.06-0.07	6.6-7.8	<2	Low--------	0.28			
230*:												
Orpha-----------	0-5	5-10	1.35-1.45	>20	0.06-0.07	6.6-7.8	<2	Low--------	0.17	5	2	1-2
	5-60	3-8	1.45-1.60	>20	0.06-0.07	6.6-7.8	<2	Low--------	0.28			
Tullock---------	0-5	5-10	1.35-1.45	>20	0.06-0.08	7.4-8.4	<2	Low--------	0.17	2	2	1-2
	5-24	0-10	1.45-1.55	>20	0.05-0.08	7.9-8.4	<2	Low--------	0.17			
	24	---	---	---	---	---	---	-----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	-----------	----	---	---	---
231*:												
Orpha-----------	0-7	5-10	1.35-1.45	>20	0.06-0.07	6.6-7.8	<2	Low--------	0.17	5	2	1-2
	7-60	3-8	1.45-1.60	>20	0.06-0.07	6.6-7.8	<2	Low--------	0.28			
Vonalee---------	0-3	5-10	1.35-1.45	6.0-20	0.07-0.09	6.6-7.8	<2	Low--------	0.24	5	2	1-2
	3-22	12-18	1.35-1.45	2.0-6.0	0.12-0.14	6.6-7.8	<2	Low--------	0.32			
	22-60	8-15	1.45-1.55	2.0-6.0	0.07-0.10	7.4-9.0	<2	Low--------	0.24			
Roughlock-------	0-4	10-27	1.10-1.20	0.6-2.0	0.17-0.20	7.4-8.4	<2	Low--------	0.43	5	5	1-2
	4-17	11-30	1.20-1.30	0.6-2.0	0.17-0.20	7.9-9.0	<2	Low--------	0.55			
	17-60	11-30	1.20-1.30	0.6-2.0	0.09-0.13	7.9-9.0	4-16	Low--------	0.55			
232*:												
Persayo---------	0-5	18-27	1.20-1.30	0.6-2.0	0.15-0.17	7.9-8.4	<4	Moderate	0.37	1	4L	.5-1
	5-15	18-30	1.15-1.25	0.6-2.0	0.15-0.19	7.9-9.0	<4	Low--------	0.37			
	15	---	---	---	---	---	---	-----------	----			
Greybull--------	0-5	20-27	1.15-1.25	0.6-2.0	0.16-0.18	7.9-8.4	<2	Low--------	0.37	2	4L	<1
	5-17	25-35	1.25-1.35	0.6-2.0	0.19-0.21	7.9-9.0	2-4	Moderate	0.43			
	17-24	20-30	1.25-1.35	0.6-2.0	0.14-0.16	7.9-9.0	2-4	Moderate	0.37			
	24	---	---	---	---	---	---	-----------	----			
233*:												
Pesmore---------	0-3	15-25	1.20-1.30	0.6-6.0	0.05-0.07	6.6-7.8	<2	Low--------	0.10	1	8	2-5
	3-9	18-30	1.25-1.35	0.6-2.0	0.05-0.08	7.4-8.4	<2	Moderate	0.10			
	9-26	18-30	1.25-1.35	0.6-2.0	0.05-0.08	7.9-9.0	<2	Moderate	0.10			
	26	---	---	---	---	---	---	-----------	----			
Asholler--------	0-3	10-25	1.15-1.25	0.6-2.0	0.11-0.15	6.6-7.8	<2	Low--------	0.17	1	8	1-2
	3-17	18-30	1.25-1.35	0.6-2.0	0.07-0.11	6.6-7.8	<2	Low--------	0.10			
	17	---	---	---	---	---	---	-----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	-----------	----	---	---	---
234--------------- Petrie	0-3	30-40	1.15-1.25	0.06-0.2	0.19-0.21	7.9-9.0	2-4	Moderate	0.43	5	4	.5-1
	3-60	35-50	1.15-1.25	<0.06	0.14-0.20	>8.4	4-8	High-------	0.49			
235*:												
Petrie, wet-----	0-4	28-35	1.15-1.25	0.06-0.6	0.19-0.21	7.9-9.0	2-4	Moderate	0.37	5	4	<1
	4-60	35-50	1.30-1.40	<0.06	0.08-0.10	>9.0	8-16	High-------	0.49			
Zigweid, wet----	0-2	18-30	1.30-1.35	0.6-2.0	0.13-0.15	7.9-9.0	2-8	Moderate	0.32	5	4L	.5-1
	2-15	28-35	1.30-1.35	0.6-2.0	0.15-0.17	7.9-9.0	4-8	Moderate	0.37			
	15-60	28-35	1.30-1.35	0.6-2.0	0.15-0.17	7.9-9.0	4-8	Moderate	0.37			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors		Wind erodi- bility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
236*:												
Petrie----------	0-1	30-40	1.15-1.25	0.06-0.2	0.19-0.21	7.9-9.0	2-4	Moderate	0.43	5	4	.5-1
	1-60	35-50	1.15-1.25	<0.06	0.14-0.20	>8.4	4-8	High------	0.49			
Arvada----------	0-2	10-20	1.25-1.35	2.0-6.0	0.13-0.15	7.4-9.0	<4	Low-------	0.32	5	3	.5-1
	2-18	35-50	1.20-1.40	<0.06	0.11-0.13	>9.0	<2	High------	0.37			
	18-38	35-50	1.20-1.40	<0.06	0.10-0.12	>9.0	>8	High------	0.37			
	38-60	28-45	1.20-1.40	0.06-0.2	0.10-0.12	>7.8	>8	High------	0.37			
237*:												
Peyton----------	0-3	15-25	1.20-1.30	0.6-2.0	0.14-0.18	6.6-7.3	<2	Low-------	0.32	5	5	2-3
	3-18	20-35	1.25-1.35	0.6-2.0	0.15-0.20	6.6-7.3	<2	Moderate	0.32			
	18-27	20-27	1.30-1.40	0.6-2.0	0.14-0.18	6.6-7.3	<2	Low-------	0.32			
	27-60	10-20	1.30-1.45	2.0-6.0	0.10-0.15	6.6-7.3	<2	Low-------	0.28			
Holderness------	0-9	15-27	1.20-1.30	0.6-2.0	0.17-0.21	6.6-7.3	<2	Low-------	0.24	5	5	2-5
	9-26	35-45	1.20-1.30	0.06-0.2	0.15-0.19	6.6-7.8	<2	High------	0.28			
	26-60	25-35	1.25-1.45	0.2-0.6	0.15-0.19	7.4-7.8	<2	Moderate	0.24			
238:												
Pits and dumps.												
239*:												
Pokeman---------	0-1	18-26	1.20-1.30	0.6-2.0	0.14-0.17	7.4-7.8	<2	Low-------	0.32	2	6	1-2
	1-10	22-32	1.20-1.30	0.6-2.0	0.16-0.20	7.4-8.4	<2	Moderate	0.37			
	10-24	18-30	1.25-1.35	0.6-2.0	0.14-0.18	7.9-9.0	2-4	Moderate	0.37			
	24	---	---	---	---	---	---	----------	----			
Threetop--------	0-2	15-25	1.15-1.25	0.6-2.0	0.16-0.18	6.6-7.8	<2	Low-------	0.32	2	5	1-2
	2-11	28-35	1.25-1.35	0.6-2.0	0.15-0.20	7.4-8.4	<2	Moderate	0.37			
	11-37	18-25	1.25-1.35	0.6-2.0	0.09-0.13	7.9-9.0	<4	Low-------	0.15			
	37	---	---	---	---	---	---	----------	----			
240*:												
Poposhia--------	0-4	10-20	1.50-1.50	0.6-2.0	0.14-0.17	7.9-8.4	<4	Low-------	0.32	5	3	1-2
	4-60	18-27	1.25-1.35	0.6-2.0	0.14-0.17	7.9-9.0	<4	Moderate	0.37			
Blazon----------	0-4	18-27	1.15-1.25	0.6-2.0	0.16-0.18	7.4-9.0	2-4	Low-------	0.32	1	4L	.5-1
	4-10	18-32	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	2-4	Low-------	0.37			
	10	---	---	---	---	---	---	----------	----			
241*:												
Rawlins---------	0-2	10-20	1.25-1.35	2.0-6.0	0.10-0.13	7.4-7.8	<2	Low-------	0.28	5	3	1-2
	2-7	20-27	1.25-1.35	0.6-2.0	0.14-0.17	7.4-8.4	<2	Moderate	0.32			
	7-18	8-18	1.30-1.40	2.0-6.0	0.09-0.13	7.9-9.0	<2	Low-------	0.28			
	18-60	8-18	1.30-1.40	2.0-6.0	0.07-0.10	7.9-9.0	<2	Low-------	0.20			
McFadden--------	0-2	8-18	1.25-1.35	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low-------	0.28	5	3	1-2
	2-10	8-18	1.25-1.35	2.0-6.0	0.11-0.13	7.9-8.4	<2	Low-------	0.32			
	10-60	8-18	1.30-1.40	2.0-6.0	0.06-0.09	7.9-9.0	<4	Low-------	0.10			
Blackhall-------	0-2	8-18	1.15-1.25	2.0-6.0	0.12-0.14	7.4-8.4	<2	Low-------	0.32	1	3	1-2
	2-13	8-18	1.35-1.45	2.0-6.0	0.10-0.14	7.9-9.0	<2	Low-------	0.37			
	13	---	---	---	---	---	---	----------	----			
242*:												
Rawlins---------	0-2	10-20	1.25-1.35	2.0-6.0	0.10-0.13	7.4-7.8	<2	Low-------	0.28	5	3	1-2
	2-8	20-27	1.25-1.35	0.6-2.0	0.14-0.17	7.4-8.4	<2	Moderate	0.32			
	8-60	8-18	1.30-1.40	2.0-6.0	0.09-0.13	7.9-9.0	<2	Low-------	0.28			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
242*:												
Rock River------	0-3	10-20	1.30-1.40	2.0-6.0	0.10-0.13	6.6-7.8	<2	Low-------	0.28	5	3	1-2
	3-20	18-27	1.35-1.45	0.6-2.0	0.14-0.16	7.4-7.8	<2	Low-------	0.32			
	20-43	10-20	1.35-1.45	2.0-6.0	0.10-0.13	7.9-9.0	<4	Low-------	0.24			
	43-60	8-18	1.35-1.45	2.0-6.0	0.08-0.11	7.9-8.4	<2	Low-------	0.15			
243*:												
Redsun----------	0-12	12-27	1.15-1.25	0.6-2.0	0.03-0.06	7.9-9.0	<4	Low-------	0.05	1	8	1-2
	12	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
244*:												
Redsun----------	0-4	12-27	1.15-1.25	0.6-2.0	0.05-0.10	7.9-9.0	<2	Low-------	0.05	1	8	1-2
	4-7	12-27	1.25-1.35	0.6-2.0	0.03-0.06	7.9-9.0	<4	Low-------	0.05			
	7	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
Redbow----------	0-3	8-16	1.10-1.20	0.6-2.0	0.14-0.18	7.9-9.0	<2	Low-------	0.43	2	4L	1-2
	3-11	11-27	1.20-1.30	0.6-2.0	0.14-0.18	7.9-9.0	<2	Low-------	0.49			
	11-27	11-27	1.20-1.30	0.6-2.0	0.14-0.18	8.5-9.0	<4	Low-------	0.49			
	27	---	---	---	---	---	---	----------	----			
245*:												
Rekop-----------	0-1	18-27	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	2-4	Low-------	0.32	1	4L	1-2
	1-12	18-27	1.35-1.45	0.6-2.0	0.14-0.18	7.4-9.0	2-4	Low-------	0.37			
	12	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
246*:												
Relsob----------	0-3	10-20	1.25-1.35	2.0-6.0	0.10-0.13	6.6-7.3	<2	Low-------	0.24	5	3	1-2
	3-19	20-35	1.25-1.35	0.6-2.0	0.14-0.18	6.6-7.8	<2	Moderate	0.28			
	19-60	2-8	1.50-1.60	6.0-20	0.05-0.08	6.6-7.8	<2	Low-------	0.15			
Peyton----------	0-5	10-20	1.40-1.50	0.6-6.0	0.11-0.13	6.1-7.3	<2	Low-------	0.10	5	3	2-4
	5-34	20-35	1.40-1.50	0.6-2.0	0.15-0.18	6.6-7.3	<2	Low-------	0.37			
	34-48	10-20	1.40-1.50	2.0-6.0	0.10-0.13	6.6-7.3	<2	Low-------	0.20			
	48-60	0-8	1.55-1.65	6.0-20	0.05-0.08	6.6-7.3	<2	Low-------	0.10			
247*:												
Rencot----------	0-2	17-26	1.20-1.30	0.6-2.0	0.09-0.11	7.9-8.4	<2	Low-------	0.15	1	7	1-2
	2-11	17-26	1.25-1.35	0.6-2.0	0.09-0.11	7.9-8.4	<2	Low-------	0.15			
	11	---	---	---	---	---	---	----------	----			
Blazon----------	0-3	18-27	1.15-1.25	0.6-2.0	0.14-0.16	7.4-9.0	2-4	Low-------	0.15	1	6	.5-1
	3-16	18-32	1.25-1.35	0.6-2.0	0.12-0.16	7.9-9.0	2-4	Low-------	0.20			
	16	---	---	---	---	---	---	----------	----			
248*:												
Rencot----------	0-5	17-26	1.20-1.30	0.6-2.0	0.12-0.14	7.9-8.4	<2	Low-------	0.20	1	5	1-2
	5-12	17-26	1.25-1.35	0.6-2.0	0.09-0.11	7.9-8.4	<2	Low-------	0.15			
	12-17	17-26	1.25-1.35	0.6-2.0	0.09-0.11	7.9-9.0	<2	Low-------	0.15			
	17	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
249*:												
Rencot----------	0-4	17-26	1.20-1.30	0.6-2.0	0.12-0.14	7.9-8.4	<2	Low-------	0.20	1	5	1-2
	4-9	17-26	1.25-1.35	0.6-2.0	0.09-0.11	7.9-8.4	<2	Low-------	0.15			
	9-15	17-26	1.25-1.35	0.6-2.0	0.09-0.11	7.9-9.0	<2	Low-------	0.15			
	15	---	---	---	---	---	---	----------	----			
Duffson---------	0-2	18-27	1.15-1.25	0.6-2.0	0.16-0.18	6.6-7.8	<2	Low-------	0.28	2	5	2-3
	2-10	23-32	1.25-1.35	0.6-2.0	0.15-0.19	7.4-7.8	<2	Moderate	0.37			
	10-22	20-30	1.25-1.35	0.6-2.0	0.14-0.18	7.9-9.0	<2	Low-------	0.32			
	22	---	---	---	---	---	---	----------	----			
250*:												
Rencot----------	0-3	15-20	1.30-1.40	2.0-6.0	0.06-0.08	7.9-8.4	<2	Low-------	0.10	1	7	1-2
	3-10	15-25	1.25-1.35	2.0-6.0	0.06-0.08	7.9-9.0	<2	Low-------	0.15			
	10	---	---	---	---	---	---	----------	----			
Thermopolis-----	0-4	18-27	1.20-1.30	0.6-2.0	0.13-0.15	7.9-8.4	<2	Low-------	0.20	1	4L	1-2
	4-11	18-27	1.25-1.35	0.6-2.0	0.13-0.18	7.9-9.0	<2	Low-------	0.32			
	11	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
251-------------- Rivra	0-7	5-15	1.20-1.30	2.0-6.0	0.10-0.13	7.4-8.4	<2	Low-------	0.28	1	3	1-2
	7-60	0-10	1.45-1.55	>20	0.02-0.04	7.4-8.4	<2	Low-------	0.02			
252*:												
Rivra-----------	0-8	5-15	1.20-1.30	2.0-6.0	0.10-0.13	7.4-8.4	<2	Low-------	0.28	1	3	1-2
	8-60	0-10	1.45-1.55	>20	0.02-0.04	7.4-8.4	<2	Low-------	0.02			
Urban land.												
253-------------- Rock outcrop	0-60	---	---	---	---	---	<2	----------	----	---	---	---
254*:												
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
Birdsley--------	0-2	18-27	1.25-1.35	<0.06	0.15-0.17	>8.4	<4	Low-------	0.43	1	4L	<.5
	2-17	18-30	1.25-1.35	<0.06	0.15-0.17	>9.0	4-16	Low-------	0.43			
	17	---	---	---	---	---	---	----------	----			
255*:												
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
Cathedral-------	0-3	5-18	1.20-1.25	6.0-20	0.08-0.09	6.0-7.3	<2	Low-------	0.20	1	6	2-4
	3-11	5-18	1.40-1.50	6.0-20	0.05-0.07	6.1-7.3	<2	Low-------	0.10			
	11	---	---	---	---	---	---	----------	----			
256*:												
Rock outcrop----	0-60	---	---	---	---	---	---	----------	----	---	---	---
Ustic Torriorthents--	0-60	---	---	---	---	---	---	----------	----	---	---	---
Rubble land-----	0-60	0	2.00-2.60	>20	0.-0.1	---	---	Low-------	----	---	8	<.1
257-------------- Rock River	0-2	8-18	1.25-1.35	2.0-6.0	0.11-0.14	6.6-7.8	<2	Low-------	0.24	5	3	1-2
	2-14	20-35	1.25-1.35	0.6-2.0	0.14-0.18	7.4-8.4	<2	Low-------	0.24			
	14-22	15-20	1.30-1.40	2.0-6.0	0.11-0.14	7.4-8.4	<2	Low-------	0.28			
	22-60	10-20	1.35-1.45	2.0-6.0	0.10-0.14	7.9-9.0	<2	Low-------	0.28			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors		Wind erodi- bility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
258*:												
Rock River------	0-2	8-18	1.25-1.35	2.0-6.0	0.11-0.14	6.6-7.8	<2	Low--------	0.24	5	3	1-2
	2-13	20-35	1.25-1.35	0.6-2.0	0.14-0.18	7.4-8.4	<2	Low--------	0.24			
	13-20	15-20	1.30-1.40	2.0-6.0	0.11-0.14	7.4-8.4	<2	Low--------	0.28			
	20-60	10-20	1.35-1.45	2.0-6.0	0.10-0.14	7.9-9.0	<2	Low--------	0.28			
Hawkstone-------	0-1	8-17	1.25-1.35	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low--------	0.28	5	3	1-2
	1-42	8-17	1.35-1.45	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low--------	0.32			
	42-60	6-15	1.40-1.50	2.0-6.0	0.07-0.12	7.9-9.0	<2	Low--------	0.32			
259*:												
Rock River------	0-3	8-18	1.25-1.35	2.0-6.0	0.11-0.14	6.6-7.8	<2	Low--------	0.24	5	3	.5-2
	3-22	20-35	1.25-1.35	0.6-2.0	0.14-0.18	7.4-8.4	<2	Low--------	0.24			
	22-31	20-30	1.30-1.40	0.6-2.0	0.14-0.18	7.9-9.0	<2	Low--------	0.24			
	31-60	15-25	1.35-1.45	0.6-2.0	0.10-0.16	7.9-9.0	<2	Low--------	0.28			
Pinelli---------	0-4	20-27	1.20-1.30	0.6-2.0	0.14-0.18	6.6-7.8	<2	Low--------	0.32	5	6	1-3
	4-24	35-50	1.15-1.25	0.2-0.6	0.17-0.21	6.6-7.8	<2	High-------	0.37			
	24-32	35-50	1.20-1.30	0.2-0.6	0.14-0.18	7.9-8.4	<2	High-------	0.37			
	32-60	20-30	1.25-1.35	0.6-2.0	0.14-0.19	7.9-9.0	<2	Moderate	0.37			
Blazon----------	0-3	18-27	1.15-1.25	0.6-2.0	0.16-0.18	7.4-9.0	2-4	Low--------	0.32	1	4L	.5-1
	3-15	18-32	1.25-1.35	0.6-2.0	0.16-0.18	7.9-9.0	2-4	Low--------	0.37			
	15	---	---	---	---	---	---	----------	----			
260*:												
Rock River------	0-5	10-20	1.30-1.40	2.0-6.0	0.10-0.13	6.6-7.8	<2	Low--------	0.28	5	3	1-2
	5-18	18-27	1.35-1.45	0.6-2.0	0.14-0.16	7.4-7.8	<2	Low--------	0.32			
	18-26	10-20	1.35-1.45	2.0-6.0	0.10-0.13	7.9-8.4	<4	Low--------	0.24			
	26-60	8-18	1.35-1.45	2.0-6.0	0.08-0.11	7.9-9.0	<2	Low--------	0.15			
Rawlins---------	0-3	10-20	1.25-1.35	2.0-6.0	0.08-0.11	7.4-7.8	<2	Low--------	0.24	5	3	1-2
	3-9	20-27	1.25-1.35	0.6-2.0	0.14-0.17	7.4-8.4	<2	Moderate	0.32			
	9-60	8-18	1.30-1.40	2.0-6.0	0.07-0.10	7.9-9.0	<2	Low--------	0.20			
Brownsto--------	0-4	10-20	1.25-1.35	2.0-6.0	0.09-0.11	7.9-8.4	<2	Low--------	0.15	1	7	1-2
	4-14	10-20	1.25-1.35	2.0-6.0	0.09-0.11	7.9-8.4	<2	Low--------	0.15			
	14-60	15-20	1.35-1.45	2.0-6.0	0.06-0.08	7.9-9.0	<2	Low--------	0.10			
261*:												
Rock River------	0-3	5-10	1.30-1.40	2.0-6.0	0.07-0.09	6.6-7.8	<2	Low--------	0.20	5	2	1-2
	3-15	20-35	1.25-1.35	0.6-2.0	0.14-0.18	7.4-8.4	<2	Low--------	0.24			
	15-23	15-20	1.30-1.40	2.0-6.0	0.11-0.14	7.4-8.4	<2	Low--------	0.28			
	23-60	10-20	1.35-1.45	2.0-6.0	0.10-0.14	7.9-9.0	<2	Low--------	0.28			
Ryan Park-------	0-4	5-15	1.25-1.35	2.0-6.0	0.10-0.13	6.6-7.8	<2	Low--------	0.28	5	3	1-2
	4-20	10-18	1.35-1.45	2.0-6.0	0.10-0.13	6.6-7.8	<2	Low--------	0.32			
	20-60	8-14	1.40-1.50	2.0-6.0	0.10-0.13	7.9-9.0	<2	Low--------	0.24			
McFadden--------	0-3	8-18	1.30-1.40	2.0-6.0	0.11-0.14	7.4-8.4	<2	Low--------	0.28	5	3	1-2
	3-60	8-18	1.35-1.45	2.0-6.0	0.11-0.14	7.9-9.0	<2	Low--------	0.28			
262*:												
Rock River------	0-4	8-18	1.25-1.35	2.0-6.0	0.11-0.14	6.6-7.8	<2	Low--------	0.24	5	3	1-2
	4-18	20-35	1.25-1.35	0.6-2.0	0.14-0.18	7.4-8.4	<2	Low--------	0.24			
	18-60	10-20	1.35-1.45	2.0-6.0	0.10-0.14	7.9-9.0	<2	Low--------	0.28			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors K	Erosion factors T	Wind erodi- bility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
262*:												
Worfman---------	0-2	12-20	1.30-1.40	2.0-6.0	0.10-0.13	6.6-7.8	<2	Low-------	0.24	1	3	1-2
	2-7	20-34	1.20-1.30	0.6-2.0	0.15-0.19	6.6-7.8	<2	Moderate	0.32			
	7-12	20-27	1.25-1.35	0.6-2.0	0.14-0.16	7.9-9.0	<2	Low-------	0.28			
	12	---	---	---	---	---	---	----------	----			
263*:												
Rock River------	0-3	8-18	1.25-1.35	2.0-6.0	0.11-0.14	6.6-7.8	<2	Low-------	0.24	5	3	1-2
	3-15	20-35	1.25-1.35	0.6-2.0	0.14-0.18	7.4-8.4	<2	Low-------	0.24			
	15-60	10-20	1.35-1.45	2.0-6.0	0.10-0.14	7.9-9.0	<2	Low-------	0.28			
Ryan Park-------	0-4	3-10	1.35-1.45	2.0-6.0	0.08-0.10	6.6-7.8	<2	Low-------	0.28	5	2	1-2
	4-16	8-18	1.35-1.45	2.0-6.0	0.11-0.13	6.6-8.4	<2	Low-------	0.32			
	16-24	8-15	1.40-1.50	2.0-6.0	0.11-0.13	7.9-8.4	<2	Low-------	0.24			
	24-60	3-15	1.40-1.50	2.0-6.0	0.05-0.07	7.9-9.0	<2	Low-------	0.10			
Hawkstone-------	0-3	8-17	1.25-1.35	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low-------	0.28	5	3	1-2
	3-48	8-17	1.35-1.45	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low-------	0.32			
	48-60	6-15	1.40-1.50	2.0-6.0	0.07-0.12	7.9-9.0	<2	Low-------	0.32			
264-------------- Roughlock	0-3	10-27	1.10-1.20	0.6-2.0	0.17-0.20	7.4-8.4	<2	Low-------	0.43	5	5	1-2
	3-32	11-30	1.20-1.30	0.6-2.0	0.17-0.20	7.9-9.0	<2	Low-------	0.55			
	32-60	11-30	1.20-1.30	0.6-2.0	0.09-0.13	7.9-9.0	4-16	Low-------	0.55			
265*:												
Roughlock-------	0-2	16-27	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low-------	0.43	3	5	1-2
	2-29	18-30	1.25-1.35	0.6-2.0	0.16-0.20	8.5-9.0	<2	Moderate	0.55			
	29-47	18-30	1.25-1.35	0.6-2.0	0.14-0.18	8.5-9.0	4-8	Moderate	0.55			
	47	---	---	---	---	---	---	----------	----			
Redbow----------	0-3	8-16	1.10-1.20	0.6-2.0	0.14-0.18	7.9-9.0	<2	Low-------	0.43	2	4L	1-2
	3-11	11-27	1.20-1.30	0.6-2.0	0.14-0.18	7.9-9.0	<2	Low-------	0.49			
	11-26	11-27	1.20-1.30	0.6-2.0	0.14-0.18	8.5-9.0	<4	Low-------	0.49			
	26	---	---	---	---	---	---	----------	----			
Redspear--------	0-2	10-25	1.10-1.20	0.6-2.0	0.17-0.20	7.9-8.4	<2	Low-------	0.43	1	5	1-2
	2-9	12-27	1.20-1.30	0.6-2.0	0.17-0.20	7.9-8.4	<2	Low-------	0.49			
	9-15	12-27	1.20-1.30	0.6-2.0	0.17-0.20	7.9-9.0	<4	Low-------	0.49			
	15	---	---	---	---	---	---	----------	----			
266*:												
Roughlock-------	0-5	10-27	1.10-1.20	0.6-2.0	0.17-0.20	7.4-8.4	<2	Low-------	0.43	5	5	1-2
	5-15	11-30	1.20-1.30	0.6-2.0	0.17-0.20	7.9-9.0	<2	Low-------	0.55			
	15-60	11-30	1.20-1.30	0.6-2.0	0.09-0.13	7.9-9.0	4-16	Low-------	0.55			
Buffcreek-------	0-2	12-18	1.15-1.25	0.6-2.0	0.09-0.11	6.6-7.8	<2	Low-------	0.20	1	7	1-2
	2-15	12-18	1.25-1.35	0.6-2.0	0.06-0.08	7.9-9.0	<2	Low-------	0.10			
	15-60	12-18	1.25-1.35	0.6-2.0	0.06-0.09	7.9-9.0	2-4	Low-------	0.10			
267*:												
Rubble land-----	0-60	0	2.00-2.60	>20	0.-0.1	---	<2	Low-------	----	---	8	<.1
Ustic Torriorthents--	---	---	---	---	---	---	---	----------	----	---	---	0-1
268-------------- Ryan Park	0-5	3-10	1.35-1.45	2.0-6.0	0.08-0.10	6.6-7.8	<2	Low-------	0.28	5	2	1-2
	5-17	8-18	1.35-1.45	2.0-6.0	0.11-0.13	6.6-8.4	<2	Low-------	0.32			
	17-60	3-15	1.40-1.50	2.0-6.0	0.05-0.07	7.9-9.0	<2	Low-------	0.10			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
269*:												
Ryan Park-------	0-2	5-15	1.25-1.35	2.0-6.0	0.10-0.13	6.6-7.8	<2	Low-------	0.28	5	3	1-2
	2-13	8-18	1.35-1.45	2.0-6.0	0.10-0.13	6.6-7.8	<2	Low-------	0.32			
	13-60	8-14	1.40-1.50	2.0-6.0	0.10-0.13	7.9-9.0	<2	Low-------	0.24			
Elk Mountain----	0-2	5-15	1.25-1.35	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low-------	0.24	2	3	1-2
	2-9	10-18	1.35-1.45	2.0-6.0	0.11-0.13	7.4-7.8	<2	Low-------	0.28			
	9-16	10-18	1.30-1.40	2.0-6.0	0.11-0.13	7.9-8.4	<2	Low-------	0.28			
	16-23	5-15	1.25-1.35	2.0-6.0	0.08-0.12	7.9-9.0	<2	Low-------	0.28			
	23	---	---	---	---	---	---	----------	----			
270*:												
Saddle----------	0-3	10-15	1.25-1.35	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low-------	0.24	2	3	<1
	3-14	20-35	1.25-1.40	0.6-2.0	0.14-0.16	7.4-7.8	<2	Moderate	0.32			
	14-18	12-25	1.30-1.50	0.6-2.0	0.12-0.14	7.9-9.0	<4	Low-------	0.32			
	18-30	5-15	1.30-1.50	2.0-6.0	0.11-0.13	7.9-9.0	<4	Low-------	0.32			
	30	---	---	---	---	---	---	----------	----			
Griffy----------	0-3	5-15	1.25-1.35	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low-------	0.28	5	3	.5-1
	3-21	20-30	1.25-1.35	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.20			
	21-60	10-20	1.35-1.50	2.0-6.0	0.10-0.12	7.9-9.0	<4	Low-------	0.24			
271:												
Salt flats.												
272--------------	0-2	40-50	1.05-1.15	0.2-0.6	0.04-0.08	7.9-9.0	<2	High------	0.10	1	8	1-2
Samday	2-12	35-50	1.15-1.25	0.06-0.2	0.14-0.18	7.9-9.0	<4	High------	0.32			
	12	---	---	---	---	---	---	----------	----			
273*:												
Savageton-------	0-2	40-50	1.10-1.20	0.06-0.2	0.08-0.12	7.9-8.4	<2	High------	0.10	2	6	1-2
	2-16	35-50	1.15-1.25	0.06-0.2	0.15-0.18	7.9-8.4	<2	High------	0.37			
	16-37	35-50	1.20-1.30	0.06-0.2	0.15-0.18	7.9-9.0	<2	High------	0.37			
	37	---	---	---	---	---	---	----------	----			
Samday----------	0-2	30-40	1.05-1.15	0.2-0.6	0.10-0.15	7.9-9.0	<2	Moderate	0.20	1	7	1-2
	2-17	35-50	1.15-1.25	0.06-0.2	0.14-0.18	7.9-9.0	<4	High------	0.32			
	17	---	---	---	---	---	---	----------	----			
274*:												
Shingle---------	0-3	18-27	1.10-1.20	0.6-2.0	0.17-0.20	7.4-8.4	<2	Low-------	0.32	1	4L	1-3
	3-16	20-32	1.20-1.30	0.6-2.0	0.17-0.20	7.4-9.0	<2	Moderate	0.37			
	16	---	---	---	---	---	---	----------	----			
Samday----------	0-3	40-50	1.05-1.15	0.2-0.6	0.15-0.17	7.9-9.0	<2	High------	0.37	1	4	1-2
	3-17	35-50	1.15-1.25	0.06-0.2	0.14-0.18	7.9-9.0	<4	High------	0.32			
	17	---	---	---	---	---	---	----------	----			
275*:												
Shingle---------	0-2	18-27	1.10-1.20	0.6-2.0	0.17-0.20	7.4-8.4	<2	Low-------	0.32	1	4L	1-3
	2-13	20-32	1.20-1.30	0.6-2.0	0.17-0.20	7.4-9.0	<2	Moderate	0.37			
	13	---	---	---	---	---	---	----------	----			
Taluce----------	0-3	10-18	1.25-1.35	2.0-6.0	0.10-0.12	7.4-8.4	<2	Low-------	0.20	1	3	.5-1
	3-12	10-18	1.30-1.40	2.0-6.0	0.10-0.13	7.9-9.0	<2	Low-------	0.20			
	12	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors		Wind erodi- bility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
276*:												
Shingle---------	0-1	18-27	1.10-1.20	0.6-2.0	0.17-0.20	7.4-8.4	<2	Low-------	0.32	1	4L	1-3
	1-11	20-32	1.20-1.30	0.6-2.0	0.17-0.20	7.4-9.0	<2	Moderate	0.37			
	11	---	---	---	---	---	---	----------	----			
Theedle---------	0-1	12-20	1.25-1.35	2.0-6.0	0.13-0.15	7.4-8.4	<2	Low-------	0.32	2	3	1-2
	1-26	20-35	1.25-1.35	0.6-2.0	0.17-0.20	7.9-9.0	<4	Moderate	0.37			
	26	---	---	---	---	---	---	----------	----			
277-------------- Silhouette	0-3	30-40	1.10-1.20	0.2-0.6	0.17-0.20	7.4-8.4	<2	High------	0.32	5	4L	1-2
	3-11	35-50	1.20-1.30	0.06-0.2	0.15-0.20	7.4-9.0	<2	High------	0.37			
	11-60	35-50	1.20-1.30	0.06-0.2	0.15-0.20	7.9-9.0	<4	High------	0.37			
278*:												
Silhouette------	0-2	30-40	1.10-1.20	0.2-0.6	0.17-0.20	7.4-8.4	<2	High------	0.32	5	4L	1-2
	2-13	35-50	1.20-1.30	0.06-0.2	0.15-0.20	7.4-9.0	<2	High------	0.37			
	13-60	35-50	1.20-1.30	0.06-0.2	0.15-0.20	7.9-9.0	<4	High------	0.37			
Petrie----------	0-3	30-40	1.15-1.25	0.06-0.2	0.19-0.21	7.9-9.0	2-4	Moderate	0.43	5	4	.5-1
	3-60	35-50	1.15-1.25	<0.06	0.14-0.20	>8.4	4-8	High------	0.49			
279*:												
Starley---------	0-8	20-27	1.15-1.25	0.6-2.0	0.11-0.15	6.6-8.4	<2	Low-------	0.20	1	6	2-3
	8-18	20-30	1.25-1.30	0.6-2.0	0.07-0.10	7.9-9.0	<2	Low-------	0.10			
	18	---	---	---	---	---	---	----------	----			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
280*:												
Stunner---------	0-3	10-20	1.25-1.35	0.6-2.0	0.16-0.18	6.6-7.3	<2	Low-------	0.24	5	3	1-3
	3-17	20-35	1.20-1.30	0.6-2.0	0.17-0.20	6.6-7.8	<2	Moderate	0.37			
	17-23	20-35	1.25-1.35	0.6-2.0	0.16-0.20	7.9-8.4	<2	Low-------	0.37			
	23-60	15-27	1.25-1.35	0.6-2.0	0.15-0.17	7.9-9.0	<2	Low-------	0.37			
Pinelli---------	0-3	27-35	1.15-1.25	0.6-2.0	0.17-0.21	6.6-7.8	<2	Moderate	0.32	5	6	1-3
	3-22	40-50	1.15-1.25	0.2-0.6	0.14-0.16	6.6-7.8	<2	High------	0.37			
	22-30	35-50	1.20-1.30	0.2-0.6	0.14-0.18	7.9-8.4	<2	High------	0.37			
	30-60	20-30	1.25-1.35	0.6-2.0	0.14-0.19	7.9-9.0	<2	Moderate	0.37			
281*:												
Sunup-----------	0-4	18-28	1.15-1.25	0.6-2.0	0.07-0.09	7.9-8.4	<2	Moderate	0.10	1	8	1-2
	4-13	18-28	1.25-1.35	0.6-2.0	0.07-0.09	7.9-9.0	<2	Moderate	0.10			
	13	---	---	---	---	---	---	----------	----			
Kishona---------	0-3	20-27	1.20-1.30	0.6-2.0	0.15-0.17	7.4-8.4	<2	Low-------	0.32	5	4L	1-2
	3-60	20-35	1.20-1.35	0.6-2.0	0.16-0.20	7.9-9.0	<4	Moderate	0.37			
Rock outcrop----	0-60	---	---	---	---	---	<2	----------	----	---	---	---
282*:												
Terro-----------	0-3	3-8	1.35-1.45	2.0-6.0	0.06-0.08	6.6-7.8	<2	Low-------	0.24	2	2	1-2
	3-20	12-18	1.35-1.45	2.0-6.0	0.12-0.14	6.6-7.8	<2	Low-------	0.28			
	20-34	10-18	1.35-1.45	2.0-6.0	0.12-0.14	7.4-9.0	<2	Low-------	0.28			
	34	---	---	---	---	---	---	----------	----			
Vonalee---------	0-2	8-15	1.25-1.35	2.0-6.0	0.12-0.14	6.6-7.8	<2	Low-------	0.28	5	3	1-2
	2-19	12-18	1.35-1.45	2.0-6.0	0.12-0.14	6.6-7.8	<2	Low-------	0.32			
	19-60	8-15	1.45-1.55	2.0-6.0	0.07-0.10	7.4-9.0	<2	Low-------	0.24			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
283*:												
Theedle	0-3	28-35	1.15-1.25	0.6-2.0	0.18-0.20	7.4-8.4	<2	Moderate	0.37	2	4L	1-2
	3-27	20-35	1.25-1.35	0.6-2.0	0.17-0.20	7.9-9.0	<4	Moderate	0.37			
	27	---	---	---	---	---	---	----------	----			
Shingle	0-2	18-27	1.10-1.20	0.6-2.0	0.17-0.20	7.4-8.4	<2	Low	0.32	1	4L	1-3
	2-17	20-32	1.20-1.30	0.6-2.0	0.17-0.20	7.4-9.0	<2	Moderate	0.37			
	17	---	---	---	---	---	---	----------	----			
Kishona	0-5	27-35	1.15-1.25	0.6-2.0	0.17-0.21	7.4-8.4	<2	Moderate	0.32	5	4L	1-2
	5-60	20-35	1.20-1.35	0.6-2.0	0.16-0.20	7.9-9.0	<4	Moderate	0.37			
284*:												
Threetop	0-2	15-20	1.25-1.35	2.0-6.0	0.12-0.14	6.6-7.8	<2	Low	0.28	2	3	1-2
	2-13	25-35	1.25-1.35	0.6-2.0	0.15-0.20	7.4-8.4	<2	Moderate	0.37			
	13-18	18-25	1.30-1.40	2.0-6.0	0.12-0.17	7.9-8.4	<2	Low	0.32			
	18-24	18-25	1.30-1.40	2.0-6.0	0.04-0.08	7.9-9.0	<4	Low	0.10			
	24	---	---	---	---	---	---	----------	----			
Sunup	0-2	18-28	1.15-1.25	0.6-2.0	0.07-0.09	7.9-8.4	<2	Moderate	0.10	1	8	1-2
	2-10	18-28	1.25-1.35	0.6-2.0	0.07-0.09	7.9-9.0	<2	Moderate	0.10			
	10	---	---	---	---	---	---	----------	----			
Frontier	0-4	10-20	1.25-1.35	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low	0.24	1	3	1-2
	4-14	25-35	1.25-1.35	0.6-2.0	0.15-0.20	7.4-8.4	<2	Moderate	0.28			
	14-17	25-35	1.25-1.35	0.6-2.0	0.15-0.20	7.9-9.0	<2	Moderate	0.32			
	17	---	---	---	---	---	---	----------	----			
285 Tisworth	0-3	10-18	1.25-1.35	2.0-6.0	0.08-0.10	7.9-9.0	<4	Low	0.28	5	3	1-2
	3-14	20-30	1.25-1.35	0.06-0.2	0.09-0.13	>9.0	8-16	Moderate	0.37			
	14-60	10-25	1.30-1.40	0.2-0.6	0.07-0.11	>9.0	8-16	Low	0.32			
286*:												
Travson	0-3	8-18	1.25-1.35	2.0-6.0	0.08-0.10	7.4-8.4	<2	Low	0.24	1	3	.5-1
	3-11	8-18	1.25-1.35	2.0-6.0	0.07-0.11	7.4-9.0	<2	Low	0.15			
	11	---	---	---	---	---	---	----------	----			
Rock outcrop	0-60	---	---	---	---	---	---	----------	----	---	---	---
287*:												
Typic Fluvaquents	0-60	---	---	---	---	---	>4	----------	----	---	---	---
Aquic Ustifluvents	0-60	---	---	---	---	---	4>	----------	----	---	---	---
288 Typic Haplaquolls	0-60	---	---	---	---	---	---	----------	----	---	---	---
289 Typic Torrifluvents	---	---	---	---	---	---	---	----------	----	---	---	---
290*:												
Uffens, thick surface	0-6	10-18	1.25-1.35	2.0-6.0	0.15-0.17	7.9-8.4	<2	Low	0.37	5	3	.5-1
	6-15	22-35	1.25-1.35	0.2-0.6	0.08-0.12	>8.4	<4	Moderate	0.37			
	15-60	18-27	1.25-1.35	0.2-0.6	0.08-0.12	>8.4	4-8	Low	0.37			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
290*:												
Uffens----------	0-2	10-18	1.25-1.35	2.0-6.0	0.15-0.17	7.9-8.4	<2	Low-------	0.37	5	3	.5-1
	2-18	22-35	1.25-1.35	0.2-0.6	0.08-0.12	>8.4	<4	Moderate	0.37			
	18-60	18-27	1.25-1.35	0.2-0.6	0.08-0.12	>8.4	4-8	Low-------	0.37			
291*:												
Uffens----------	0-5	10-18	1.25-1.35	2.0-6.0	0.15-0.17	7.9-8.4	<2	Low-------	0.37	5	3	.5-1
	5-12	22-35	1.25-1.35	0.2-0.6	0.08-0.12	>8.4	<4	Moderate	0.37			
	12-60	18-27	1.25-1.35	0.2-0.6	0.08-0.12	>8.4	4-8	Low-------	0.37			
Typic Torrifluvents--	0-60	---	---	---	---	>8.4	>8	----------	----	---	---	---
292-------------- Ulm	0-4	28-35	1.15-1.25	0.6-2.0	0.17-0.21	6.6-7.8	<2	Moderate	0.32	5	6	1-3
	4-16	35-50	1.20-1.30	0.06-0.2	0.17-0.21	6.6-8.4	<2	High------	0.37			
	16-60	30-42	1.20-1.30	0.2-0.6	0.17-0.21	7.9-9.0	<2	High------	0.37			
293*:												
Ulm-------------	0-2	20-25	1.15-1.25	0.6-2.0	0.16-0.18	6.6-7.8	<2	Low-------	0.32	5	6	1-3
	2-24	35-50	1.20-1.30	0.06-0.2	0.17-0.21	6.6-8.4	<2	High------	0.37			
	24-60	30-42	1.20-1.30	0.2-0.6	0.17-0.21	7.9-9.0	<2	High------	0.37			
Absted----------	0-2	10-18	1.30-1.40	2.0-6.0	0.11-0.14	6.6-7.8	<2	Low-------	0.28	5	3	1-2
	2-11	35-50	1.30-1.40	0.06-0.2	0.16-0.18	7.9-9.0	<4	High------	0.43			
	11-18	35-50	1.30-1.45	0.06-0.2	0.11-0.13	>8.4	>8	High------	0.43			
	18-60	30-45	1.30-1.45	0.06-0.2	0.11-0.13	7.9-9.0	>8	High------	0.43			
294-------------- Ulrant	0-9	18-25	1.15-1.25	0.6-2.0	0.16-0.18	6.1-7.3	<2	Low-------	0.28	3	6	2-4
	9-23	24-35	1.25-1.35	0.6-2.0	0.10-0.14	6.6-7.8	<2	Moderate	0.20			
	23-54	18-27	1.25-1.35	0.6-2.0	0.09-0.12	7.9-9.0	<2	Low-------	0.20			
	54	---	---	---	---	---	---	----------	----			
295*: Urban land.												
Clarkelen-------	0-2	10-18	1.30-1.40	2.0-6.0	0.10-0.12	7.4-8.4	<2	Low-------	0.28	5	3	1-2
	2-42	10-18	1.40-1.50	2.0-6.0	0.07-0.10	7.9-9.0	<4	Low-------	0.32			
	42-60	0-5	1.25-1.35	6.0-20	0.03-0.05	7.9-9.0	<4	Low-------	0.02			
296*: Urban land.												
Docpar----------	0-6	20-27	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low-------	0.32	5	4L	1-2
	6-18	24-35	1.25-1.35	0.6-2.0	0.17-0.20	7.9-8.4	<2	Low-------	0.32			
	18-25	24-35	1.25-1.35	0.6-2.0	0.15-0.18	7.9-9.0	<2	Low-------	0.32			
	25-60	12-20	1.35-1.45	2.0-6.0	0.11-0.14	7.9-9.0	<4	Low-------	0.28			
297*: Urban land.												
Savageton-------	0-2	40-50	1.10-1.20	0.06-0.2	0.15-0.20	7.9-8.4	<2	High------	0.32	2	4	1-2
	2-18	35-50	1.15-1.25	0.06-0.2	0.15-0.18	7.9-8.4	<2	High------	0.37			
	18-26	35-50	1.20-1.30	0.06-0.2	0.15-0.18	7.9-9.0	<2	High------	0.37			
	26	---	---	---	---	---	---	----------	----			
Samday----------	0-1	40-50	1.05-1.15	0.2-0.6	0.15-0.17	7.9-9.0	<2	High------	0.37	1	4	1-2
	1-12	35-50	1.15-1.25	0.06-0.2	0.14-0.18	7.9-9.0	<4	High------	0.32			
	12	---	---	---	---	---	---	----------	----			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors K	Erosion factors T	Wind erodibility group	Organic matter
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
298*: Urban land.												
Silhouette------	0-4	30-40	1.10-1.20	0.2-0.6	0.17-0.20	7.4-8.4	<2	High------	0.32	5	4L	1-2
	4-12	35-50	1.20-1.30	0.06-0.2	0.15-0.20	7.4-9.0	<2	High------	0.37			
	12-60	35-50	1.20-1.30	0.06-0.2	0.15-0.20	7.9-9.0	<4	High------	0.37			
299*: Urban land.												
Theedle---------	0-2	20-27	1.15-1.25	0.6-2.0	0.17-0.20	7.4-8.4	<2	Low-------	0.32	2	4L	1-2
	2-34	20-35	1.25-1.35	0.6-2.0	0.17-0.20	7.9-9.0	<4	Moderate	0.37			
	34	---	---	---	---	---	---	----------	----			
Shingle---------	0-1	18-27	1.10-1.20	0.6-2.0	0.17-0.20	7.4-8.4	<2	Low-------	0.32	1	4L	1-3
	1-14	20-32	1.20-1.30	0.6-2.0	0.17-0.20	7.4-9.0	<2	Moderate	0.37			
	14	---	---	---	---	---	---	----------	----			
300-------------- Vonalee	0-2	5-10	1.35-1.45	6.0-20	0.07-0.09	6.6-7.8	<2	Low-------	0.24	5	2	1-2
	2-14	12-18	1.35-1.45	2.0-6.0	0.12-0.14	6.6-7.8	<2	Low-------	0.32			
	14-60	8-15	1.45-1.55	2.0-6.0	0.07-0.10	7.4-9.0	<2	Low-------	0.24			
301*: Vonalee---------	0-3	5-10	1.35-1.45	6.0-20	0.07-0.09	6.6-7.8	<2	Low-------	0.24	5	2	1-2
	3-19	12-18	1.35-1.45	2.0-6.0	0.12-0.14	6.6-7.8	<2	Low-------	0.32			
	19-60	8-15	1.45-1.55	2.0-6.0	0.07-0.10	7.4-9.0	<2	Low-------	0.24			
Hiland----------	0-5	8-18	1.25-1.35	2.0-6.0	0.12-0.15	6.6-7.3	<2	Low-------	0.28	5	3	1-2
	5-26	20-30	1.25-1.35	0.6-2.0	0.14-0.16	7.4-8.4	<2	Moderate	0.32			
	26-60	10-20	1.30-1.40	2.0-6.0	0.10-0.15	7.9-9.0	<2	Low-------	0.32			
302*: Vonalee---------	0-6	8-15	1.25-1.35	2.0-6.0	0.12-0.14	6.6-7.8	<2	Low-------	0.28	5	3	1-2
	6-28	12-18	1.35-1.45	2.0-6.0	0.12-0.14	6.6-7.8	<2	Low-------	0.32			
	28-60	8-15	1.45-1.55	2.0-6.0	0.07-0.10	7.4-9.0	<2	Low-------	0.24			
Slickspots.												
303-------------- Whiteriver	0-5	18-26	1.15-1.25	0.6-2.0	0.16-0.18	6.6-7.3	<2	Moderate	0.32	5	5	1-2
	5-19	35-45	1.20-1.30	0.06-0.2	0.15-0.20	6.6-7.8	<2	High------	0.37			
	19-23	35-45	1.20-1.30	0.06-0.2	0.15-0.20	6.6-7.8	<2	High------	0.37			
	23-60	23-35	1.25-1.35	0.2-0.6	0.17-0.20	7.9-8.4	<2	Moderate	0.43			
304*: Woosley---------	0-5	18-27	1.10-1.25	0.6-2.0	0.16-0.18	6.6-7.8	<2	Low-------	0.37	2	6	2-3
	5-18	28-35	1.20-1.30	0.6-2.0	0.19-0.21	7.4-7.8	<2	Moderate	0.43			
	18-32	18-30	1.20-1.30	0.6-2.0	0.19-0.21	7.9-8.4	<2	Moderate	0.43			
	32	---	---	---	---	---	---	----------	----			
Starley---------	0-8	20-27	1.15-1.25	0.6-2.0	0.11-0.15	6.6-8.4	<2	Low-------	0.20	1	6	2-3
	8-18	20-30	1.25-1.30	0.6-2.0	0.07-0.10	7.9-9.0	<2	Low-------	0.10			
	18	---	---	---	---	---	---	----------	----			
305*: Worf------------	0-2	10-18	1.25-1.35	2.0-6.0	0.12-0.14	7.4-7.8	<2	Low-------	0.28	1	3	1-2
	2-8	18-27	1.25-1.35	0.6-2.0	0.14-0.18	7.4-8.4	<2	Moderate	0.28			
	8-14	12-24	1.30-1.40	0.6-2.0	0.12-0.16	7.9-9.0	<2	Low-------	0.32			
	14	---	---	---	---	---	---	----------	----			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permea- bility	Available water capacity	Soil reaction	Salinity	Shrink- swell potential	Erosion factors		Wind erodi- bility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
305*:												
Bowbac----------	0-3	10-20	1.35-1.45	2.0-6.0	0.10-0.15	6.6-8.4	<2	Low-------	0.28	2	3	1-2
	3-10	18-30	1.35-1.45	0.6-2.0	0.12-0.15	7.4-8.4	<2	Low-------	0.28			
	10-15	15-27	1.35-1.45	0.6-2.0	0.14-0.18	7.9-8.4	<2	Low-------	0.28			
	15-28	10-20	1.40-1.50	2.0-6.0	0.10-0.13	7.9-9.0	<2	Low-------	0.28			
	28	---	---	---	---	---	---	----------	----			
306*:												
Worf------------	0-2	15-25	1.15-1.25	0.6-2.0	0.16-0.18	7.4-7.8	<2	Low-------	0.32	1	5	1-3
	2-10	25-35	1.25-1.35	0.6-2.0	0.15-0.19	7.4-8.4	<2	Moderate	0.32			
	10-13	20-30	1.25-1.35	0.6-2.0	0.15-0.19	7.9-9.0	<2	Low-------	0.37			
	13	---	---	---	---	---	---	----------	----			
Briggsdale------	0-4	15-25	1.20-1.30	0.6-2.0	0.18-0.20	7.4-7.8	<2	Low-------	0.20	2	5	1-2
	4-10	35-45	1.20-1.30	0.06-0.2	0.14-0.18	7.4-8.4	<2	High------	0.32			
	10-19	35-45	1.20-1.30	0.06-0.2	0.14-0.18	7.9-8.4	<2	High------	0.32			
	19-32	24-35	1.30-1.40	0.2-0.6	0.14-0.18	7.9-9.0	<2	Moderate	0.37			
	32	---	---	---	---	---	---	----------	----			
307*:												
Worf Variant----	0-8	15-20	1.25-1.35	2.0-6.0	0.13-0.15	6.6-7.3	<2	Low-------	0.32	1	3	2-4
	8-17	20-30	1.25-1.35	0.6-2.0	0.15-0.20	6.6-7.3	<2	Moderate	0.32			
	17	---	---	---	---	---	---	----------	----			
Cushman Variant-	0-2	12-20	1.25-1.35	2.0-6.0	0.13-0.15	6.6-7.3	<2	Low-------	0.32	2	3	2-4
	2-24	20-30	1.25-1.35	0.6-2.0	0.14-0.16	6.6-7.3	<2	Moderate	0.37			
	24	---	---	---	---	---	---	----------	----			
Peyton----------	0-12	10-20	1.25-1.35	2.0-6.0	0.13-0.15	6.6-7.3	<2	Low-------	0.28	5	3	2-3
	12-30	20-35	1.25-1.35	0.6-2.0	0.15-0.20	6.6-7.3	<2	Moderate	0.32			
	30-60	20-27	1.30-1.40	0.6-2.0	0.14-0.18	6.6-7.3	<2	Low-------	0.32			
308*:												
Worfstone-------	0-2	8-18	1.25-1.35	2.0-6.0	0.11-0.13	6.6-7.8	<2	Low-------	0.20	1	3	1-2
	2-6	20-30	1.25-1.35	0.6-2.0	0.04-0.09	7.4-8.4	<2	Moderate	0.10			
	6-17	10-20	1.35-1.45	2.0-6.0	0.02-0.03	7.9-9.0	<2	Low-------	0.05			
	17	---	---	---	---	---	---	----------	----			
McFadden--------	0-2	8-18	1.25-1.35	2.0-6.0	0.11-0.13	7.4-8.4	<2	Low-------	0.28	5	3	1-2
	2-26	8-18	1.25-1.35	2.0-6.0	0.11-0.13	7.9-8.4	<2	Low-------	0.32			
	26-60	8-18	1.30-1.40	2.0-6.0	0.06-0.09	7.9-9.0	<4	Low-------	0.10			
Lupinto---------	0-2	12-18	1.20-1.30	0.6-2.0	0.08-0.11	7.4-8.4	<2	Low-------	0.17	1	7	1-3
	2-8	28-35	1.25-1.35	0.6-2.0	0.10-0.15	7.4-8.4	<2	Moderate	0.20			
	8-43	20-28	1.25-1.35	0.6-2.0	0.04-0.08	7.9-9.0	<4	Low-------	0.10			
	43-60	12-18	1.35-1.45	2.0-6.0	0.03-0.06	7.9-9.0	<4	Low-------	0.10			
309*:												
Zeomont---------	0-5	3-10	1.35-1.45	6.0-20	0.06-0.08	7.4-7.8	<2	Low-------	0.15	5	2	1-2
	5-60	0-5	1.40-1.55	6.0-20	0.05-0.07	7.4-7.8	<2	Low-------	0.17			
Ryan Park-------	0-2	3-10	1.35-1.45	2.0-6.0	0.08-0.10	6.6-7.8	<2	Low-------	0.28	5	2	1-2
	2-30	10-18	1.35-1.45	2.0-6.0	0.11-0.13	6.6-8.4	<2	Low-------	0.32			
	30-60	3-15	1.40-1.50	2.0-6.0	0.05-0.07	7.9-9.0	<2	Low-------	0.10			
310-------------- Zigweid	0-3	18-27	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low-------	0.32	5	4L	1-2
	3-14	20-35	1.20-1.30	0.6-2.0	0.16-0.21	7.9-8.4	<2	Moderate	0.37			
	14-60	20-35	1.25-1.35	0.6-2.0	0.16-0.21	7.9-9.0	<2	Moderate	0.37			

See footnote at end of table.

TABLE 16.--PHYSICAL AND CHEMICAL PROPERTIES OF THE SOILS--Continued

Soil name and map symbol	Depth	Clay	Moist bulk density	Permeability	Available water capacity	Soil reaction	Salinity	Shrink-swell potential	Erosion factors		Wind erodibility group	Organic matter
									K	T		
	In	Pct	G/cc	In/hr	In/in	pH	mmhos/cm					Pct
311*:												
Zigweid----------	0-3	18-27	1.15-1.25	0.6-2.0	0.16-0.18	7.4-8.4	<2	Low--------	0.32	5	4L	1-2
	3-18	20-35	1.20-1.30	0.6-2.0	0.16-0.21	7.9-8.4	<2	Moderate	0.37			
	18-60	20-35	1.25-1.35	0.6-2.0	0.16-0.21	7.9-9.0	<2	Moderate	0.37			
Theedle----------	0-2	20-27	1.15-1.25	0.6-2.0	0.17-0.20	7.4-8.4	<2	Low--------	0.32	2	4L	1-2
	2-36	20-35	1.25-1.35	0.6-2.0	0.17-0.20	7.9-9.0	<4	Moderate	0.37			
	36	---	---	---	---	---	---	----------	----			
312*:												
Zigweid----------	0-4	28-35	1.15-1.25	0.6-2.0	0.18-0.21	7.4-8.4	<2	Moderate	0.32	5	4L	1-2
	4-16	20-35	1.20-1.30	0.6-2.0	0.16-0.21	7.9-8.4	<2	Moderate	0.37			
	16-60	20-35	1.25-1.35	0.6-2.0	0.16-0.21	7.9-9.0	<2	Moderate	0.37			
Urban land.												

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 17.--SOIL AND WATER FEATURES

("Flooding" and "water table" and terms such as "rare," "brief," "apparent," and "perched" are explained in the text. The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern or that data were not estimated)

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
101 Absher	D	Rare	---	---	>6.0	---	---	>60	---	Low	High	High.
102*:												
Adel	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
Pagosa	C	None	---	---	>6.0	---	---	40-60	Hard	Moderate	High	Moderate.
103*:												
Alcova	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Rock River	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
104*:												
Alcova	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Stunner	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
105*:												
Alflack	C	None	---	---	>6.0	---	---	20-40	Soft	Low	Low	Low.
Foxton	C	None	---	---	>6.0	---	---	20-40	Hard	Low	Moderate	Low.
106*:												
Alflack	C	None	---	---	>6.0	---	---	20-40	Soft	Low	Low	Low.
Irson	D	None	---	---	>6.0	---	---	8-20	Hard	Moderate	Moderate	Low.
Foxton Variant	B	None	---	---	>6.0	---	---	40-50	Hard	Moderate	Moderate	Low.
107 Almy	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
108 Amodac	C	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
109*:												
Amodac	C	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
Keyner	D	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
110 Aquic Ustifluvents	---	Occasional	Brief	Apr-Jun	1.0-2.0	Apparent	Apr-Jun	>60	---	High	High	High.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
111*:												
Aquic Ustifluvents	---	Rare	---	---	1.0-2.0	Apparent	Apr-Jun	>60	---	High	High	High.
Orpha	A	None	---	---	>6.0	---	---	>60	---	Low	Moderate	Low.
112*:												
Arvada	D	None	---	---	>6.0	---	---	>60	---	Low	High	High.
Absted	C	None	---	---	>6.0	---	---	>60	---	Low	High	High.
Slickspots.												
113*:												
Arvada	D	None	---	---	>6.0	---	---	>60	---	Low	High	High.
Slickspots.												
114*:												
Bachus	C	None	---	---	>6.0	---	---	20-40	Hard	Moderate	Moderate	Moderate.
Nathrop	B	None	---	---	>6.0	---	---	20-40	Hard	Moderate	High	Low.
115*:												
Bachus	C	None	---	---	>6.0	---	---	20-40	Hard	Moderate	Moderate	Moderate.
Clayburn	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
116*:												
Bachus	C	None	---	---	>6.0	---	---	20-40	Hard	Moderate	Moderate	Moderate.
Pagosa	C	None	---	---	>6.0	---	---	40-60	Hard	Moderate	High	Moderate.
117 Badland	D	None	---	---	>6.0	---	---	0-3	Soft	---	---	---
118*:												
Badwater	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
Rubble land	A	None	---	---	>6.0	---	---	>60	---	---	---	---
119*:												
Barnum	B	Occasional	Brief	Apr-Jul	>6.0	---	---	>60	---	Low	High	Moderate.
Redbank	B	Occasional	Brief	Apr-Jul	>6.0	---	---	>60	---	Low	High	Moderate.
120 Bateson	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
121, 122 Bessemer	C	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
123*:												
Bessemer	C	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Urban land.												
124 Blackdraw	D	None	---	---	>6.0	---	---	>60	---	Low	High	High.
125*:												
Blackdraw	D	None	---	---	>6.0	---	---	>60	---	Low	High	High.
Lolite	D	None	---	---	>6.0	---	---	6-20	Soft	Low	High	High.
Gullied land.												
126*:												
Blazon	D	None	---	---	>6.0	---	---	10-20	Soft	Low	High	Low.
Worfman	D	None	---	---	>6.0	---	---	10-20	Soft	Low	High	Low.
127*:												
Blazon	D	None	---	---	>6.0	---	---	10-20	Soft	Low	High	Low.
Cragosen	D	None	---	---	>6.0	---	---	10-20	Soft	Low	High	Low.
Worfman	D	None	---	---	>6.0	---	---	10-20	Soft	Low	High	Low.
128*:												
Boettcher	C	None	---	---	>6.0	---	---	20-40	Soft	Low	Moderate	Low.
Brownsto	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
129*:												
Boettcher	C	None	---	---	>6.0	---	---	20-40	Soft	Low	Moderate	Low.
Pinelli	C	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Worfman	D	None	---	---	>6.0	---	---	10-20	Soft	Low	High	Low.
130*:												
Bosler	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Alcova	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
131*:												
Bosler	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
131*:												
Hiland-----------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
132*:												
Bowbac-----------	C	None---------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
Hiland-----------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
133*:												
Bowbac-----------	C	None---------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
Hiland-----------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Worf-------------	D	None---------	---	---	>6.0	---	---	8-20	Soft	Low------	High-----	Low.
134*:												
Bowbac-----------	C	None---------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
Taluce-----------	D	None---------	---	---	>6.0	---	---	6-20	Soft	Low------	High-----	Low.
Terro------------	C	None---------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
135--------------- Bridger	B	None---------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
136*:												
Brokenhorn-------	D	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
Hyshot-----------	D	None---------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	High.
137*:												
Brownsto---------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Lupinto----------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
138*:												
Buffcreek--------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Redarrow---------	D	None---------	---	---	>6.0	---	---	8-20	Soft	Low------	High-----	Low.
139*:												
Cabin------------	B	None---------	---	---	>6.0	---	---	>60	---	Moderate	Low------	Low.
Herbman----------	D	None---------	---	---	>6.0	---	---	8-20	Soft	Low------	Moderate	Low.
140*:												
Cadoma-----------	D	None---------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	High.
Renohill---------	C	None---------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
140*:												
Samday-----------	D	None--------	---	---	>6.0	---	---	6-20	Soft	Low------	High-----	Low.
141--------------- Cambria	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
142*:												
Cambria----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Zigweid----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
143*:												
Cambria----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
Zigweid----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
144*:												
Castner----------	D	None--------	---	---	>6.0	---	---	8-20	Hard	Moderate	High-----	Low.
Chincap----------	B	None--------	---	---	>6.0	---	---	20-40	Hard	Moderate	Moderate	Low.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Hard	---	---	---
145*:												
Castner----------	D	None--------	---	---	>6.0	---	---	8-20	Hard	Moderate	High-----	Low.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Hard	---	---	---
146--------------- Cavegulch	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
147*:												
Cavegulch--------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
Brokenhorn-------	D	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
148--------------- Chalkcreek	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
149*:												
Chipendale-------	D	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
Chipenhill-------	D	None--------	---	---	>6.0	---	---	8-20	Soft	Low------	High-----	High.
150*:												
Chipendale-------	D	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
Razsun-----------	D	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	High.

See footnote at end of table

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
151--------------- Chipenhill	D	None---------	---	---	>6.0	---	---	8-20	Soft	Low------	High-----	High.
152*:												
Chipenhill-------	D	None---------	---	---	>6.0	---	---	8-20	Soft	Low------	High-----	High.
Rock outcrop-----	D	None---------	---	---	>6.0	---	---	0	Soft	---	---	---
153*:												
Chittum----------	D	None---------	---	---	>6.0	---	---	10-20	Hard	Moderate	Moderate	Moderate.
Nielsen----------	D	None---------	---	---	>6.0	---	---	10-20	Hard	Moderate	High-----	Low.
Rock outcrop-----	D	None---------	---	---	>6.0	---	---	0	Hard	---	---	---
154*:												
Chittum----------	D	None---------	---	---	>6.0	---	---	10-20	Hard	Moderate	Moderate	Moderate.
Sneffels---------	C	None---------	---	---	>6.0	---	---	20-40	Hard	Moderate	High-----	Low.
155--------------- Clarkelen	B	Rare---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
156*:												
Clayburn---------	B	None---------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
Moslander--------	D	Frequent----	Brief-----	May-Jul	0-1.5	Apparent	Apr-Jul	>60	---	High-----	High-----	High.
157*:												
Coalmont---------	C	None---------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
Milren-----------	C	None---------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
Cragosen---------	D	None---------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
158--------------- Connerton	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
159--------------- Copeman	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
160--------------- Crago	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
161*:												
Crago------------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
Pensore----------	D	None---------	---	---	>6.0	---	---	10-20	Hard	Low------	Moderate	Low.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
162---------------- Cragosen	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
163*:												
Cragosen----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
Chalkcreek--------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
164*:												
Cragosen Variant-	D	None--------	---	---	>6.0	---	---	4-20	Hard	Low------	High-----	Low.
Brownsto Variant-	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
165---------------- Curecanti	B	Rare--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
166---------------- Curecanti Variant	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
167*:												
Cushman-----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
Forkwood----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
168*:												
Cushool-----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
Worfstone---------	C	None--------	---	---	>6.0	---	---	10-20	Hard	Low------	High-----	Low.
169*:												
Decross-----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
Woosley-----------	C	None--------	---	---	>6.0	---	---	20-40	Hard	Moderate	High-----	Low.
170*:												
Delphill----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
Blazon------------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
171*:												
Delplain----------	D	None--------	---	---	>6.0	---	---	10-20	Hard	Low------	Moderate	Low.
Rock outcrop------	D	None--------	---	---	>6.0	---	---	0	Hard	---	---	---
172*:												
Diamondville------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
Worfman-----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

		Flooding			High water table			Bedrock			Risk of corrosion	
Soil name and map symbol	Hydrologic group	Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Potential frost action	Uncoated steel	Concrete
					Ft			In				
173 Docpar	B	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
174 Draknab	A	Rare	---	---	>6.0	---	---	>60	---	Low	High	Low.
175: Dune land.												
176*:												
Edlin	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Rock River	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Bosler	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
177*:												
Edlin	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
Ryan Park	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
178*:												
Effington	C	None	---	---	>6.0	---	---	>60	---	Low	High	High.
Uffens	B	None	---	---	>6.0	---	---	>60	---	Low	High	High.
179*:												
Enos	C	None	---	---	>6.0	---	---	20-40	Soft	Low	High	Moderate.
Wallson	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
180*:												
Farlow	B	None	---	---	>6.0	---	---	>60	---	Moderate	High	Low.
Starley	D	None	---	---	>6.0	---	---	7-20	Hard	Moderate	High	Low.
Rock outcrop	D	None	---	---	>6.0	---	---	0	Hard	---	---	---
181*:												
Farlow	B	None	---	---	>6.0	---	---	40-60	Hard	Moderate	High	Low.
Starley	D	None	---	---	>6.0	---	---	7-20	Hard	Moderate	High	Low.
182*:												
Fiveoh	B	None	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
Thermopolis	D	None	---	---	>6.0	---	---	10-20	Soft	Low	High	Low.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

		Flooding			High water table			Bedrock			Risk of corrosion	
Soil name and map symbol	Hydro-logic group	Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Potential frost action	Uncoated steel	Concrete
					Ft			In				
183--------------- Forelle	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
184*:												
Forelle----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
Diamondville-----	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
185*:												
Forelle----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
Lupinto----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
186*:												
Forkwood---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
Keyner-----------	D	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
187*:												
Forkwood---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
Ulm--------------	C	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
188*:												
Forkwood---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
Zigweid----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
189*:												
Gateridge--------	C	None--------	---	---	>6.0	---	---	15-20	Soft	Moderate	Moderate	Low.
Taluce Variant---	C	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	Moderate	Low.
190--------------- Griffy	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
191*:												
Griffy-----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Emblem-----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
192*:												
Grimstone--------	B	None--------	---	---	>6.0	---	---	20-40	Soft	Moderate	Moderate	Low.
Grimstone Variant	C	None--------	---	---	>6.0	---	---	20-40	Hard	Moderate	Moderate	Low.
193--------------- Haverdad	B	Rare---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
194*:												
Haverdad	B	Rare	---	---	>6.0	---	---	>60	---	Low	High	Low.
Clarkelen	B	Rare	---	---	>6.0	---	---	>60	---	Low	High	Low.
195*:												
Haverdad	B	Rare	---	---	>6.0	---	---	>60	---	Low	High	High.
Clarkelen	B	Rare	---	---	>6.0	---	---	>60	---	Low	High	Moderate.
196 Havermom	B	Rare	---	---	4.0-6.0	Apparent	Mar-Jun	>60	---	Low	High	High.
197 Hawkstone	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
198*:												
Hazton	D	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Moderate	Low.
Rock outcrop	D	None	---	---	>6.0	---	---	0	Hard	---	---	---
199, 200, 201 Hiland	B	None	---	---	>6.0	---	---	>60	---	Low	High	Low.
202*:												
Inchau	B	None	---	---	>6.0	---	---	20-40	Soft	Moderate	Moderate	Low.
Clayburn	B	None	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
Chittum	D	None	---	---	>6.0	---	---	10-20	Hard	Moderate	Moderate	Moderate.
203*:												
Inchau	B	None	---	---	>6.0	---	---	20-40	Soft	Moderate	Moderate	Low.
Farlow	B	None	---	---	>6.0	---	---	40-60	Hard	Moderate	High	Low.
204 Irson	D	None	---	---	>6.0	---	---	8-20	Hard	Moderate	Moderate	Low.
205*:												
Irson	D	None	---	---	>6.0	---	---	8-20	Hard	Moderate	Moderate	Low.
Kezar	C	None	---	---	>6.0	---	---	20-40	Hard	Moderate	Moderate	Low.
Rock outcrop	D	None	---	---	>6.0	---	---	0	Hard	---	---	---
206*:												
Irson	D	None	---	---	>6.0	---	---	8-20	Hard	Moderate	Moderate	Low

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
206*:												
Sebud------------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
207*:												
Keeline----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Taluce-----------	D	None--------	---	---	>6.0	---	---	6-20	Soft	Low------	High-----	Low.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Soft	---	---	---
208--------------- Keyner	D	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
209*:												
Keyner-----------	D	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
Absted-----------	C	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
Slickspots.												
210*:												
Keyner-----------	D	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
Hiland-----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
211*:												
Kezar------------	C	None--------	---	---	>6.0	---	---	20-40	Hard	Moderate	Moderate	Low.
Irson------------	D	None--------	---	---	>6.0	---	---	8-20	Hard	Moderate	Moderate	Low.
Clayburn---------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
212--------------- Lander	C	Frequent----	Brief-----	Apr-Jun	1.5-3.5	Apparent	Apr-Jun	>60	---	High-----	High-----	Moderate.
213*:												
Leavitt----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
Coutis-----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
214*, 215*:												
Lolite-----------	D	None--------	---	---	>6.0	---	---	6-20	Soft	Low------	High-----	High.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Soft	---	---	---
216--------------- Lonebear	D	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
217*:												
Lupinto----------	B	None--------	---	---	>6.0	---	---	40-60	Soft	Low------	High-----	Low.
Alcova-----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
218--------------- Lupinto Family	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
219*:												
McFadden---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Edlin------------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Blackhall--------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
220*:												
Middlewood-------	D	None--------	---	---	>6.0	---	---	10-20	Hard	Low------	High-----	Low.
Kather-----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
221*:												
Milren-----------	C	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
Bosler-----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Rock River-------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
222*:												
Mudray-----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	High.
Bributte---------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	High.
Birdsley---------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Moderate.
223*:												
Nathrop----------	B	None--------	---	---	>6.0	---	---	20-40	Hard	Moderate	High-----	Low.
Starley----------	D	None--------	---	---	>6.0	---	---	7-20	Hard	Moderate	High-----	Low.
224*:												
Neldore----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
Moyerson---------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Soft	---	---	---
225--------------- Nunnston	C	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

		Flooding			High water table			Bedrock			Risk of corrosion	
Soil name and map symbol	Hydrologic group	Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness	Potential frost action	Uncoated steel	Concrete
					Ft			In				
226*:												
Oceanet----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
Persayo----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Moderate.
227*:												
Orella-----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	High.
Cadoma-----------	D	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	High.
Petrie-----------	D	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
228*:												
Orella-----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	High.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Soft	---	---	---
229--------------- Orpha	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate	Low.
230*:												
Orpha------------	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate	Low.
Tullock----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	Moderate	Low.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Soft	---	---	---
231*:												
Orpha------------	A	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate	Low.
Vonalee----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Roughlock--------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
232*:												
Persayo----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Moderate.
Greybull---------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	High.
233*:												
Pesmore----------	C	None--------	---	---	>6.0	---	---	20-40	Hard	Low------	High-----	Low.
Asholler---------	D	None--------	---	---	>6.0	---	---	6-20	Hard	Moderate	Moderate	Low.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Hard	---	---	---
234--------------- Petrie	D	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro-logic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
235*:												
Petrie, wet------	D	Frequent----	Very long	May-Sep	2.0-3.0	Apparent	May-Sep	>60	---	Moderate	High-----	Moderate.
Zigweid, wet-----	C	Frequent----	Very long	May-Sep	1.5-3.0	Apparent	May-Sep	>60	---	Moderate	High-----	Low.
236*:												
Petrie-----------	D	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
Arvada-----------	D	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
237*:												
Peyton-----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
Holderness-------	C	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
238: Pits and dumps.												
239*:												
Pokeman----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	High.
Threetop---------	C	None--------	---	---	>6.0	---	---	20-40	Hard	Low------	High-----	Low.
240*:												
Poposhia---------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	High-----	Low.
Blazon-----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
241*:												
Rawlins----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
McFadden---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Blackhall--------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
242*:												
Rawlins----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Rock River-------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
243*:												
Redsun-----------	D	None--------	---	---	>6.0	---	---	4-20	Hard	Low------	High-----	Low.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Hard	---	---	---
244*:												
Redsun-----------	D	None--------	---	---	>6.0	---	---	4-20	Hard	Low------	High-----	Low.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Hard	---	---	---

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydro- logic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
244*:												
Redbow-----------	C	None--------	---	---	>6.0	---	---	20-40	Hard	Moderate	High-----	Low.
245*:												
Rekop------------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	High.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Soft	---	---	---
246*:												
Relsob-----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	Moderate	Low.
Peyton-----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
247*:												
Rencot-----------	D	None--------	---	---	>6.0	---	---	10-20	Hard	Low------	High-----	Low.
Blazon-----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
248*:												
Rencot-----------	D	None--------	---	---	>6.0	---	---	8-20	Hard	Low------	High-----	Moderate.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Hard	---	---	---
249*:												
Rencot-----------	D	None--------	---	---	>6.0	---	---	8-20	Hard	Low------	High-----	Moderate.
Duffson----------	B	None--------	---	---	>6.0	---	---	20-40	Hard	Moderate	Moderate	Low.
250*:												
Rencot-----------	D	None--------	---	---	>6.0	---	---	10-20	Hard	Low------	High-----	Low.
Thermopolis------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Hard	---	---	---
251--------------- Rivra	C	Rare--------	---	---	3.0-5.0	Apparent	Apr-Jun	>60	---	Low------	High-----	Low.
252*:												
Rivra------------	C	Rare--------	---	---	3.0-5.0	Apparent	Apr-Jun	>60	---	Low------	High-----	Low.
Urban land.												
253--------------- Rock outcrop	D	None--------	---	---	>6.0	---	---	0	Soft	---	---	---
254*:												
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Soft	---	---	---

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
254*:												
Birdsley----------	D	None---------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Moderate.
255*:												
Rock outcrop-----	D	None---------	---	---	>6.0	---	---	0	Hard	---	---	---
Cathedral---------	D	None---------	---	---	>6.0	---	---	10-20	Hard	Moderate	Moderate	Moderate.
256*:												
Rock outcrop-----	D	None---------	---	---	>6.0	---	---	0	Hard	---	---	---
Ustic Torriorthents---	D	None---------	---	---	>6.0	---	---	4-20	Soft	---	High-----	Moderate.
Rubble land------	A	None---------	---	---	>6.0	---	---	>40	Hard	---	---	---
257--------------- Rock River	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
258*:												
Rock River--------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Hawkstone---------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
259*:												
Rock River--------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Pinelli-----------	C	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Blazon------------	D	None---------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
260*:												
Rock River--------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Rawlins-----------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Brownsto----------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
261*:												
Rock River--------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Ryan Park---------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
McFadden----------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
262*:												
Rock River--------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Worfman-----------	D	None---------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
263*:												
Rock River--------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Ryan Park---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Hawkstone---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
264--------------- Roughlock	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
265*:												
Roughlock---------	B	None--------	---	---	>6.0	---	---	40-60	Hard	Low------	High-----	Moderate.
Redbow------------	C	None--------	---	---	>6.0	---	---	20-40	Hard	Moderate	High-----	Low.
Redspear----------	D	None--------	---	---	>6.0	---	---	10-20	Hard	Moderate	High-----	Moderate.
266*:												
Roughlock---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
Buffcreek---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
267*:												
Rubble land------	A	None--------	---	---	>6.0	---	---	>40	Hard	---	---	---
Ustic Torriorthents---	D	None--------	---	---	>6.0	---	---	>10	Soft-Hard	Low------	High-----	Low.
268--------------- Ryan Park	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
269*:												
Ryan Park---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Elk Mountain-----	B	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
270*:												
Saddle-----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
Griffy-----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
271: Salt flats.												
272--------------- Samday	D	None--------	---	---	>6.0	---	---	6-20	Soft	Low------	High-----	Low.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
273*:												
Savageton--------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Moderate.
Samday-----------	D	None--------	---	---	>6.0	---	---	6-20	Soft	Low------	High-----	Low.
274*:												
Shingle----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
Samday-----------	D	None--------	---	---	>6.0	---	---	6-20	Soft	Low------	High-----	Low.
275*:												
Shingle----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
Taluce-----------	D	None--------	---	---	>6.0	---	---	6-20	Soft	Low------	High-----	Low.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Soft	---	---	---
276*:												
Shingle----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
Theedle----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
277--------------- Silhouette	C	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
278*:												
Silhouette-------	C	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
Petrie-----------	D	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
279*:												
Starley----------	D	None--------	---	---	>6.0	---	---	7-20	Hard	Moderate	High-----	Low.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Hard	---	---	---
280*:												
Stunner----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Pinelli----------	C	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
281*:												
Sunup------------	D	None--------	---	---	>6.0	---	---	10-20	Hard	Low------	High-----	Low.
Kishona----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Hard	---	---	---
282*:												
Terro------------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
282*:												
Vonalee----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
283*:												
Theedle----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
Shingle----------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
Kishona----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
284*:												
Threetop---------	C	None--------	---	---	>6.0	---	---	20-40	Hard	Low------	High-----	Low.
Sunup------------	D	None--------	---	---	>6.0	---	---	10-20	Hard	Low------	High-----	Low.
Frontier---------	C	None--------	---	---	>6.0	---	---	10-20	Hard	Low------	High-----	Moderate.
285--------------- Tisworth	C	Rare--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
286*:												
Travson----------	D	None--------	---	---	>6.0	---	---	6-20	Hard	Low------	High-----	Low.
Rock outcrop-----	D	None--------	---	---	>6.0	---	---	0	Hard	---	---	---
287*:												
Typic Fluvaquents	D	Occasional	Brief-----	Mar-Jun	0-1.0	Apparent	Apr-Jun	>60	---	Moderate	High-----	High.
Aquic Ustifluvents----	---	Rare--------	---	---	1.0-2.0	Apparent	Apr-Jun	>60	---	High-----	High-----	High.
288--------------- Typic Haplaquolls	D	Rare--------	---	---	1.0-2.0	Apparent	May-Jul	>60	---	High-----	High-----	Low.
289--------------- Typic Torrifluvents	---	Rare--------	---	---	>6.0	---	---	>60	---	---	High-----	High.
290*:												
Uffens, thick surface---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
Uffens-----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
291*:												
Uffens-----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
Typic Torrifluvents---	---	Rare--------	---	---	>6.0	---	---	>60	---	---	High-----	High.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
292----------------- Ulm	C	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
293*:												
Ulm----------------	C	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Absted------------	C	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	High.
294----------------- Ulrant	B	None---------	---	---	>6.0	---	---	40-60	Hard	Moderate	High-----	Low.
295*: Urban land.												
Clarkelen---------	B	Rare---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
296*: Urban land.												
Docpar------------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
297*: Urban land.												
Savageton---------	C	None---------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Moderate.
Samday------------	D	None---------	---	---	>6.0	---	---	6-20	Soft	Low------	High-----	Low.
298*: Urban land.												
Silhouette--------	C	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Moderate.
299*: Urban land.												
Theedle-----------	C	None---------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
Shingle-----------	D	None---------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
300----------------- Vonalee	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
301*:												
Vonalee-----------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Hiland------------	B	None---------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
302*:												
Vonalee----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Slickspots.												
303--------------- Whiteriver	C	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
304*:												
Woosley----------	C	None--------	---	---	>6.0	---	---	20-40	Hard	Moderate	High-----	Low.
Starley----------	D	None--------	---	---	>6.0	---	---	7-20	Hard	Moderate	High-----	Low.
305*:												
Worf-------------	D	None--------	---	---	>6.0	---	---	10-20	Soft	Low------	High-----	Low.
Bowbac-----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
306*:												
Worf-------------	D	None--------	---	---	>6.0	---	---	9-20	Soft	Low------	High-----	Low.
Briggsdale-------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.
307*:												
Worf Variant-----	C	None--------	---	---	>6.0	---	---	10-20	Soft	Moderate	Moderate	Low.
Cushman Variant--	C	None--------	---	---	>6.0	---	---	20-40	Soft	Moderate	Moderate	Low.
Peyton-----------	B	None--------	---	---	>6.0	---	---	>60	---	Moderate	Moderate	Low.
308*:												
Worfstone--------	C	None--------	---	---	>6.0	---	---	10-20	Hard	Low------	High-----	Low.
McFadden---------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Lupinto----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
309*:												
Zeomont----------	A	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Ryan Park--------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
310--------------- Zigweid	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
311*:												
Zigweid----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Theedle----------	C	None--------	---	---	>6.0	---	---	20-40	Soft	Low------	High-----	Low.

See footnote at end of table.

TABLE 17.--SOIL AND WATER FEATURES--Continued

Soil name and map symbol	Hydrologic group	Flooding			High water table			Bedrock		Potential frost action	Risk of corrosion	
		Frequency	Duration	Months	Depth	Kind	Months	Depth	Hardness		Uncoated steel	Concrete
					Ft			In				
312*:												
Zigweid----------	B	None--------	---	---	>6.0	---	---	>60	---	Low------	High-----	Low.
Urban land.												

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* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 18.--CLASSIFICATION OF THE SOILS

(An asterisk in the first column indicates that the soil is a taxadjunct to the series in all or some map units. See text for a description of those characteristics of the soil that are outside the range of the series.)

Soil name	Family or higher taxonomic class
Absher	Fine, montmorillonitic Borollic Natrargids
Absted	Fine, montmorillonitic, mesic Haplustollic Natrargids
Adel	Fine-loamy, mixed Pachic Cryoborolls
Alcova	Fine-loamy, mixed Borollic Haplargids
Alflack	Sandy-skeletal, mixed Typic Cryorthents
Almy	Fine-loamy, mixed Borollic Haplargids
Amodac	Fine-loamy, mixed, mesic Ustollic Camborthids
Arvada	Fine, montmorillonitic, mesic Ustollic Natrargids
Asholler	Loamy-skeletal, mixed, nonacid, frigid Lithic Ustic Torriorthents
Bachus	Fine-loamy, mixed Argic Pachic Cryoborolls
Badwater	Loamy-skeletal, mixed Argic Pachic Cryoborolls
Barnum	Fine-loamy, mixed (calcareous), mesic Ustic Torrifluvents
Bateson	Fine-loamy, mixed Borollic Haplargids
Bessemer	Fine, mixed, mesic Ustollic Haplargids
Birdsley	Loamy, mixed (calcareous), mesic, shallow Typic Torriorthents
Blackdraw	Fine, mixed, nonacid, mesic Ustic Torriorthents
Blackhall	Loamy, mixed (calcareous), frigid, shallow Ustic Torriorthents
Blazon	Loamy, mixed (calcareous), frigid, shallow Ustic Torriorthents
Boettcher	Fine, montmorillonitic Borollic Haplargids
*Bosler	Fine-loamy over sandy or sandy-skeletal, mixed Borollic Haplargids
Bowbac	Fine-loamy, mixed, mesic Ustollic Haplargids
Bributte	Clayey, montmorillonitic (calcareous), mesic, shallow Typic Torriorthents
Bridger	Fine, mixed Argic Cryoborolls
Briggsdale	Fine, montmorillonitic, mesic Ustollic Paleargids
Brokenhorn	Fine, mixed, mesic Calcic Gypsiorthids
Brownsto	Loamy-skeletal, mixed Borollic Calciorthids
Brownsto Variant	Loamy-skeletal, mixed Borollic Calciorthids
Buffcreek	Loamy-skeletal, mixed, mesic Ustollic Calciorthids
Cabin	Fine-loamy over sandy or sandy-skeletal, mixed Argic Cryoborolls
Cadoma	Fine, montmorillonitic, mesic Ustollic Camborthids
Cambria	Fine-loamy, mixed, mesic Ustollic Haplargids
Castner	Loamy-skeletal, mixed Lithic Haploborolls
Cathedral	Loamy-skeletal, mixed Lithic Haploborolls
Cavegulch	Fine-silty, mixed, mesic Cambic Gypsiorthids
Chalkcreek	Fine-silty, mixed Borollic Camborthids
Chincap	Coarse-loamy, mixed Typic Haploborolls
Chipendale	Fine, mixed, mesic Cambic Gypsiorthids
Chipenhill	Clayey, mixed (calcareous), mesic, shallow Typic Torriorthents
*Chittum	Loamy, mixed Argic Lithic Cryoborolls
Clarkelen	Coarse-loamy, mixed (calcareous), mesic Ustic Torrifluvents
Clayburn	Fine-loamy, mixed Argic Pachic Cryoborolls
Coalmont	Fine, montmorillonitic Borollic Paleargids
Connerton	Fine-loamy, mixed, mesic Torriorthentic Haplustolls
Copeman	Fine-loamy, mixed, mesic Ustollic Calciorthids
Coutis	Coarse-loamy, mixed Pachic Cryoborolls
Crago	Loamy-skeletal, carbonatic Borollic Calciorthids
Cragosen	Loamy-skeletal, mixed (calcareous), frigid, shallow Ustic Torriorthents
Cragosen Variant	Loamy-skeletal, mixed (calcareous), frigid Lithic Ustic Torriorthents
Curecanti	Loamy-skeletal, mixed Typic Argiborolls
Curecanti Variant	Loamy-skeletal, mixed Typic Haploborolls
Cushman	Fine-loamy, mixed, mesic Ustollic Haplargids
Cushman Variant	Fine-loamy, mixed Aridic Argiborolls
Cushool	Fine-loamy, mixed Borollic Haplargids
Decross	Fine-loamy, mixed Argic Pachic Cryoborolls
Delphill	Fine-loamy, mixed (calcareous), frigid Ustic Torriorthents
Delplain	Clayey-skeletal, mixed, nonacid, frigid Lithic Ustic Torriorthents
Diamondville	Fine-loamy, mixed Borollic Haplargids
Docpar	Fine-loamy, mixed, mesic Fluventic Camborthids

TABLE 18.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Draknab	Sandy, mixed, mesic Ustic Torrifluvents
Duffson	Fine-loamy, mixed Aridic Argiborolls
Edlin	Coarse-loamy, mixed Borollic Camborthids
Effington	Fine, montmorillonitic, mesic Typic Natrargids
Elk Mountain	Coarse-loamy, mixed Borollic Haplargids
Emblem	Fine-loamy over sandy or sandy-skeletal, mixed, mesic Typic Calciorthids
Enos	Coarse-loamy, mixed, mesic Typic Haplargids
Farlow	Loamy-skeletal, mixed Typic Cryoborolls
Fiveoh	Coarse-loamy, mixed Borollic Calciorthids
Forelle	Fine-loamy, mixed Borollic Haplargids
Forkwood	Fine-loamy, mixed, mesic Ustollic Haplargids
Foxton	Fine, montmorillonitic Typic Cryoboralfs
Foxton Variant	Fine-loamy, mixed Typic Cryoboralfs
Frontier	Loamy, mixed, mesic Lithic Ustollic Haplargids
Gateridge	Loamy, mixed, shallow Typic Eutroboralfs
Greybull	Fine-loamy, mixed (calcareous), mesic Typic Torriorthents
Griffy	Fine-loamy, mixed, mesic Typic Haplargids
Grimstone	Fine-loamy, mixed Typic Cryoboralfs
Grimstone Variant	Loamy-skeletal, mixed Typic Cryoboralfs
Haverdad	Fine-loamy, mixed (calcareous), mesic Ustic Torrifluvents
Havermom	Fine-loamy, mixed (calcareous), frigid Ustic Torrifluvents
Hawkstone	Coarse-loamy, mixed Borollic Camborthids
Hazton	Loamy, mixed Lithic Cryoborolls
Herbman	Loamy-skeletal, mixed, shallow Typic Cryoborolls
Hiland	Fine-loamy, mixed, mesic Ustollic Haplargids
Holderness	Fine, montmorillonitic Aridic Argiborolls
Hyshot	Fine, mixed, mesic Calcic Gypsiorthids
Inchau	Fine-loamy, mixed Argic Cryoborolls
*Irson	Loamy-skeletal, mixed Lithic Cryoborolls
Kather	Fine, montmorillonitic Borollic Haplargids
Keeline	Coarse-loamy, mixed (calcareous), mesic Ustic Torriorthents
Keyner	Fine-loamy, mixed, mesic Haplustollic Natrargids
Kezar	Fine-loamy, mixed Argic Cryoborolls
Kishona	Fine-loamy, mixed (calcareous), mesic Ustic Torriorthents
Lander	Fine-loamy, mixed Fluvaquentic Haploborolls
Leavitt	Fine-loamy, mixed Argic Cryoborolls
Lolite	Clayey, mixed, nonacid, mesic, shallow Typic Torriorthents
Lonebear	Fine, mixed, mesic Cambic Gypsiorthids
Lupinto	Loamy-skeletal, mixed Borollic Haplargids
Lupinto Family	Loamy-skeletal, mixed Borollic Haplargids
McFadden	Coarse-loamy, mixed Borollic Calciorthids
Middlewood	Clayey, montmorillonitic Borollic Lithic Haplargids
Milren	Fine, montmorillonitic Borollic Paleargids
Moslander	Fine-loamy, mixed (calcareous) Typic Cryaquolls
Moyerson	Clayey, montmorillonitic (calcareous), frigid, shallow Ustic Torriorthents
Mudray	Clayey, montmorillonitic, mesic, shallow Typic Natrargids
Nathrop	Loamy-skeletal, mixed Argic Cryoborolls
Neldore	Clayey, montmorillonitic, nonacid, frigid, shallow Ustic Torriorthents
Nielsen	Loamy-skeletal, mixed Argic Lithic Cryoborolls
Nunnston	Fine, montmorillonitic Aridic Argiborolls
Oceanet	Loamy, mixed (calcareous), mesic, shallow Typic Torriorthents
Orella	Clayey, mixed (calcareous), mesic, shallow Ustic Torriorthents
Orpha	Mixed, mesic Ustic Torripsamments
Pagosa	Fine, montmorillonitic Mollic Cryoboralfs
Pensore	Loamy-skeletal, carbonatic Borollic Lithic Calciorthids
Persayo	Loamy, mixed (calcareous), mesic, shallow Typic Torriorthents
Pesmore	Loamy-skeletal, mixed Typic Haploborolls
Petrie	Fine, montmorillonitic (calcareous), mesic Ustertic Torriorthents
Peyton	Fine-loamy, mixed Aridic Argiborolls
Pinelli	Fine, montmorillonitic Borollic Haplargids
Pokeman	Fine-loamy, mixed, mesic Ustollic Haplargids
Poposhia	Fine-loamy, mixed (calcareous), frigid Ustic Torriorthents
Rawlins	Coarse-loamy, mixed Borollic Haplargids

TABLE 18.--CLASSIFICATION OF THE SOILS--Continued

Soil name	Family or higher taxonomic class
Razsun	Fine, mixed, mesic Cambic Gypsiorthids
Redarrow	Loamy, mixed (calcareous), mesic, shallow Ustic Torriorthents
Redbank	Coarse-loamy, mixed (calcareous), mesic Ustic Torrifluvents
Redbow	Coarse-silty, mixed, mesic Ustollic Calciorthids
Redspear	Loamy, mixed (calcareous), mesic Lithic Ustic Torriorthents
Redsun	Loamy-skeletal, mixed (calcareous), mesic Lithic Ustic Torriorthents
Rekop	Loamy, gypsic, mesic, shallow Ustic Torriorthents
Relsob	Fine-loamy over sandy or sandy-skeletal, mixed Borollic Haplargids
Rencot	Loamy-skeletal, mixed Borollic Lithic Calciorthids
Renohill	Fine, montmorillonitic, mesic Ustollic Haplargids
*Rivra	Sandy-skeletal, mixed, frigid Ustic Torrifluvents
Rock River	Fine-loamy, mixed Borollic Haplargids
Roughlock	Coarse-silty, mixed, mesic Ustollic Calciorthids
Ryan Park	Coarse-loamy, mixed Borollic Haplargids
Saddle	Fine-loamy, mixed, mesic Typic Haplargids
Samday	Clayey, montmorillonitic (calcareous), mesic, shallow Ustic Torriorthents
Savageton	Fine, montmorillonitic, mesic Ustollic Camborthids
Sebud	Loamy-skeletal, mixed Typic Cryoborolls
Shingle	Loamy, mixed (calcareous), mesic, shallow Ustic Torriorthents
Silhouette	Fine, montmorillonitic, mesic Ustollic Camborthids
Sneffels	Fine, montmorillonitic Argic Cryoborolls
Starley	Loamy-skeletal, mixed Lithic Cryoborolls
Stunner	Fine-loamy, mixed Borollic Haplargids
Sunup	Loamy-skeletal, mixed (calcareous), mesic Lithic Ustic Torriorthents
Taluce	Loamy, mixed (calcareous), mesic, shallow Ustic Torriorthents
Taluce Variant	Loamy, mixed, shallow Torriorthentic Haploborolls
Terro	Coarse-loamy, mixed, mesic Ustollic Haplargids
Theedle	Fine-loamy, mixed (calcareous), mesic Ustic Torriorthents
Thermopolis	Loamy, mixed (calcareous), frigid, shallow Ustic Torriorthents
Threetop	Fine-loamy, mixed, mesic Ustollic Haplargids
Tisworth	Fine-loamy, mixed Borollic Natrargids
Travson	Loamy, mixed (calcareous), mesic Lithic Ustic Torriorthents
Tullock	Mixed, mesic Ustic Torripsamments
Uffens	Fine-loamy, mixed, mesic Typic Natrargids
Ulm	Fine, montmorillonitic, mesic Ustollic Haplargids
Ulrant	Fine-loamy, mixed Typic Argiborolls
Vonalee	Coarse-loamy, mixed, mesic Ustollic Haplargids
Wallson	Coarse-loamy, mixed, mesic Typic Haplargids
Whiteriver	Fine, mixed Borollic Haplargids
Woosley	Fine-loamy, mixed Argic Cryoborolls
Worf	Loamy, mixed, mesic, shallow Ustollic Haplargids
Worf Variant	Loamy, mixed, shallow Aridic Argiborolls
Worfman	Loamy, mixed, shallow Borollic Haplargids
Worfstone	Loamy-skeletal, mixed Borollic Lithic Haplargids
Zeomont	Mixed, frigid Ustic Torripsamments
*Zigweid	Fine-loamy, mixed, mesic Ustollic Camborthids

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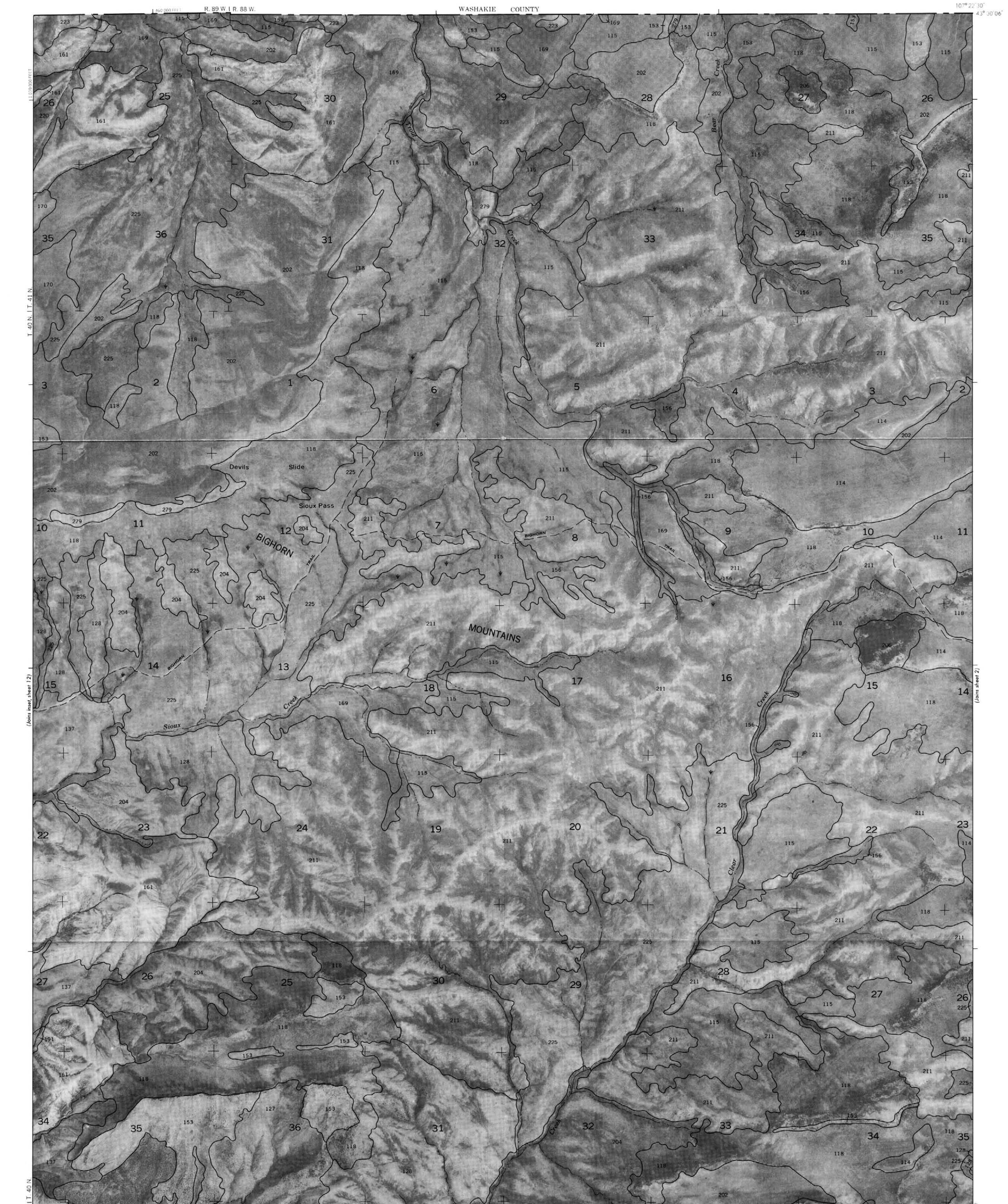


5000 4000 3000 2000 1000 0 5000 10000 Feet

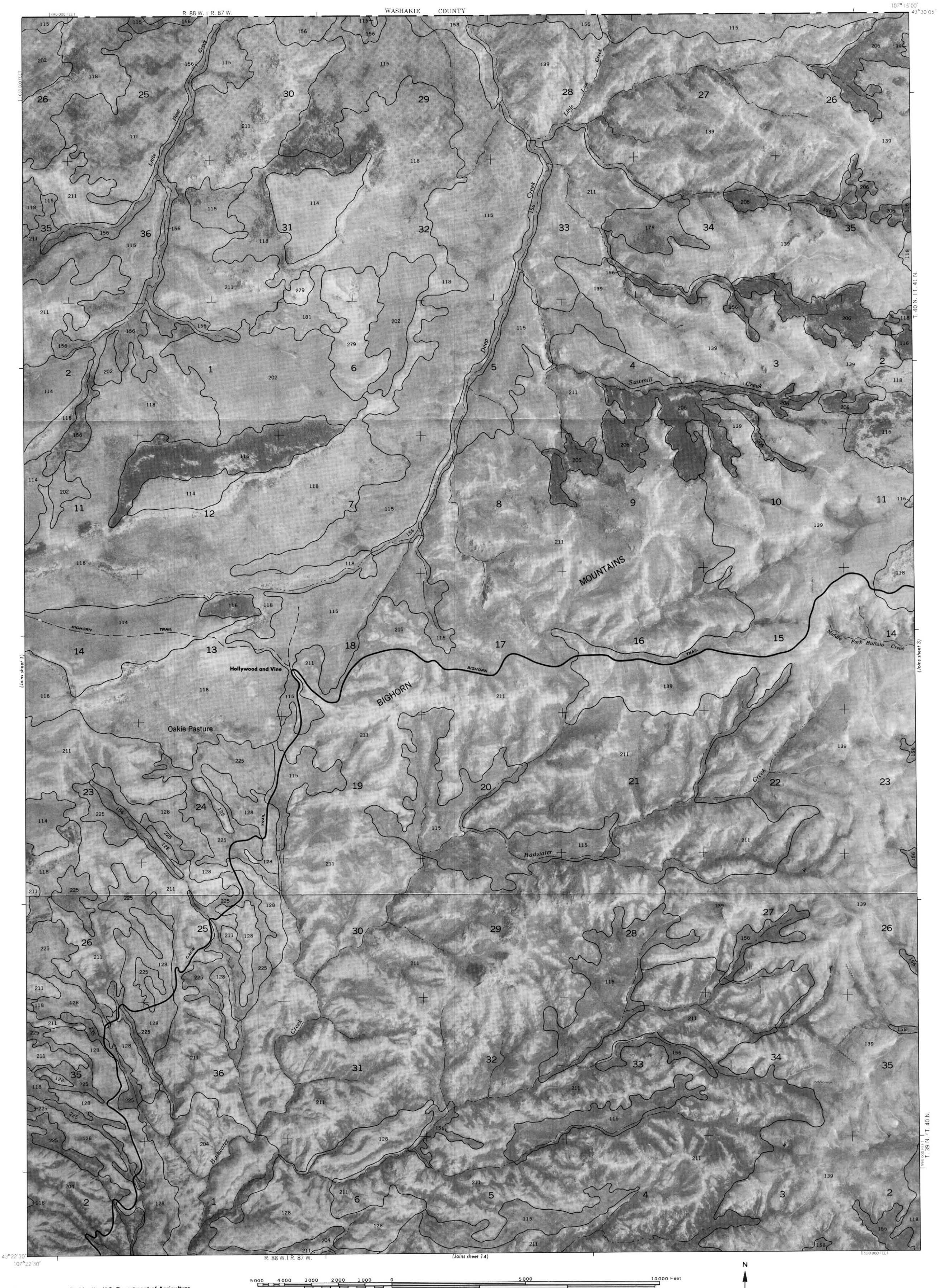
1 .5 0 1 2 3 Kilometers

Scale 1:24 000

N

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

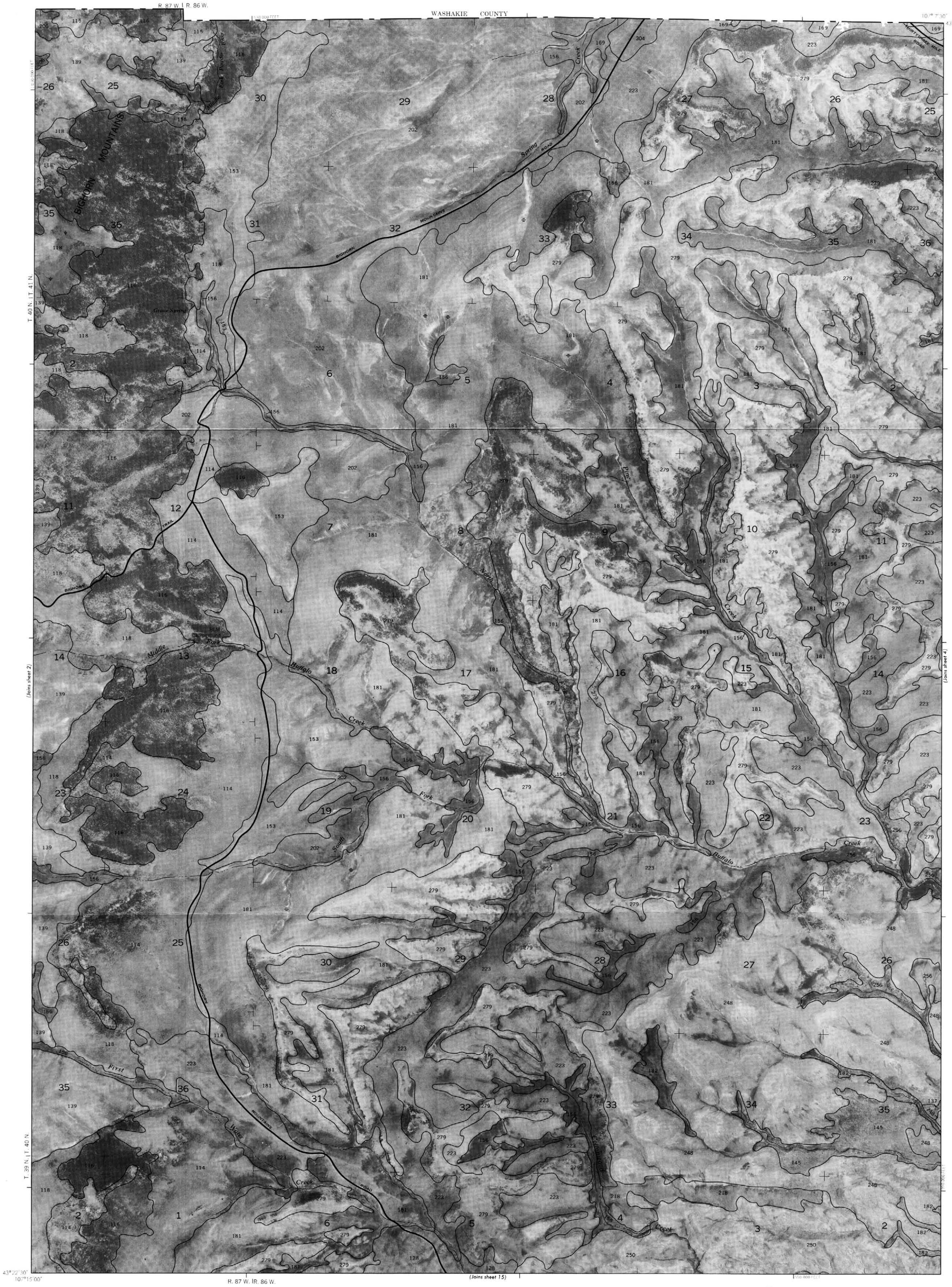
NATRONA COUNTY AREA, WYOMING NO. 1



5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

NATRONA COUNTY AREA, WYOMING NO. 2

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

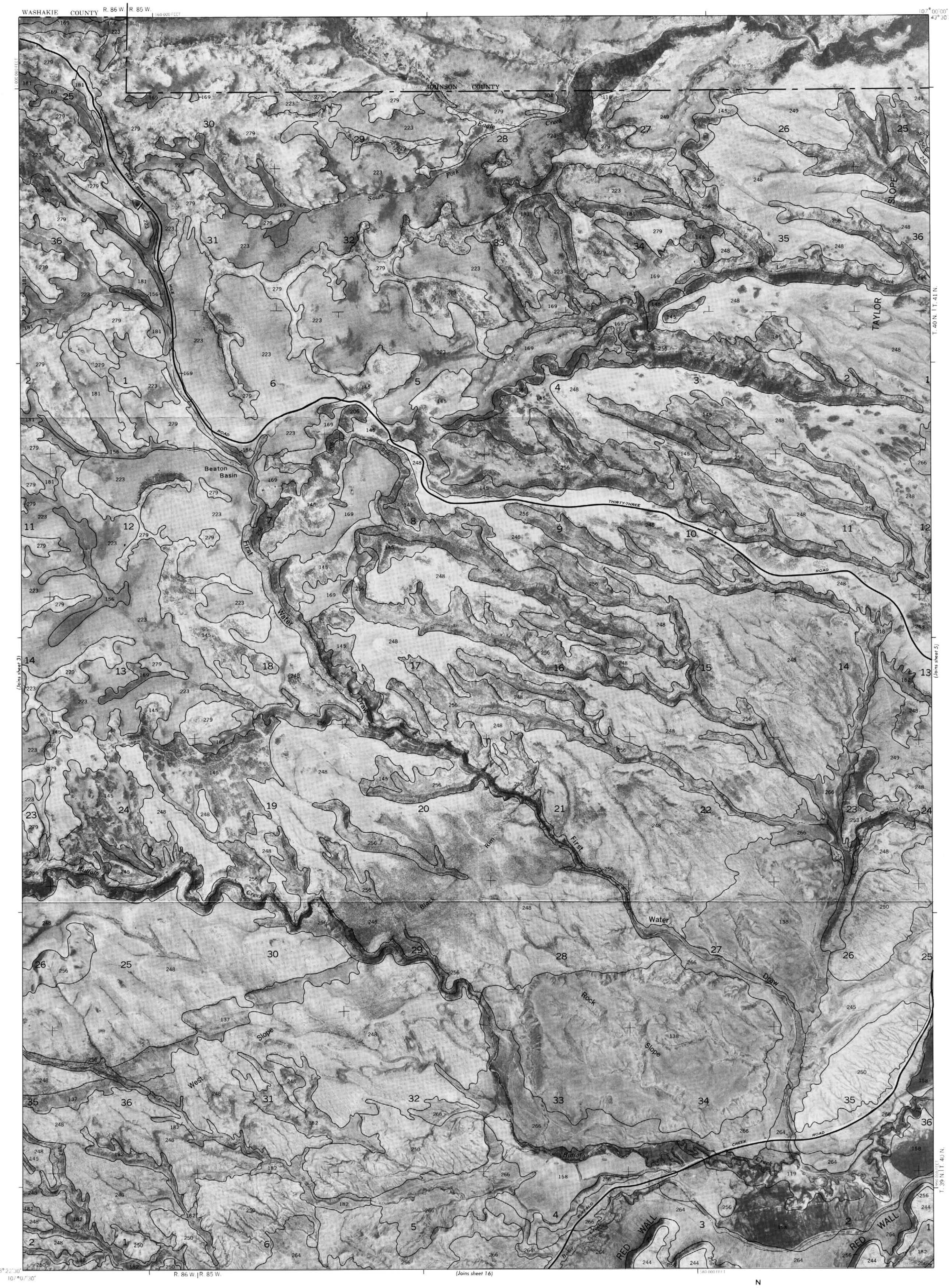
5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale 1:24000

N

NATRONA COUNTY AREA, WYOMING NO. 3

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

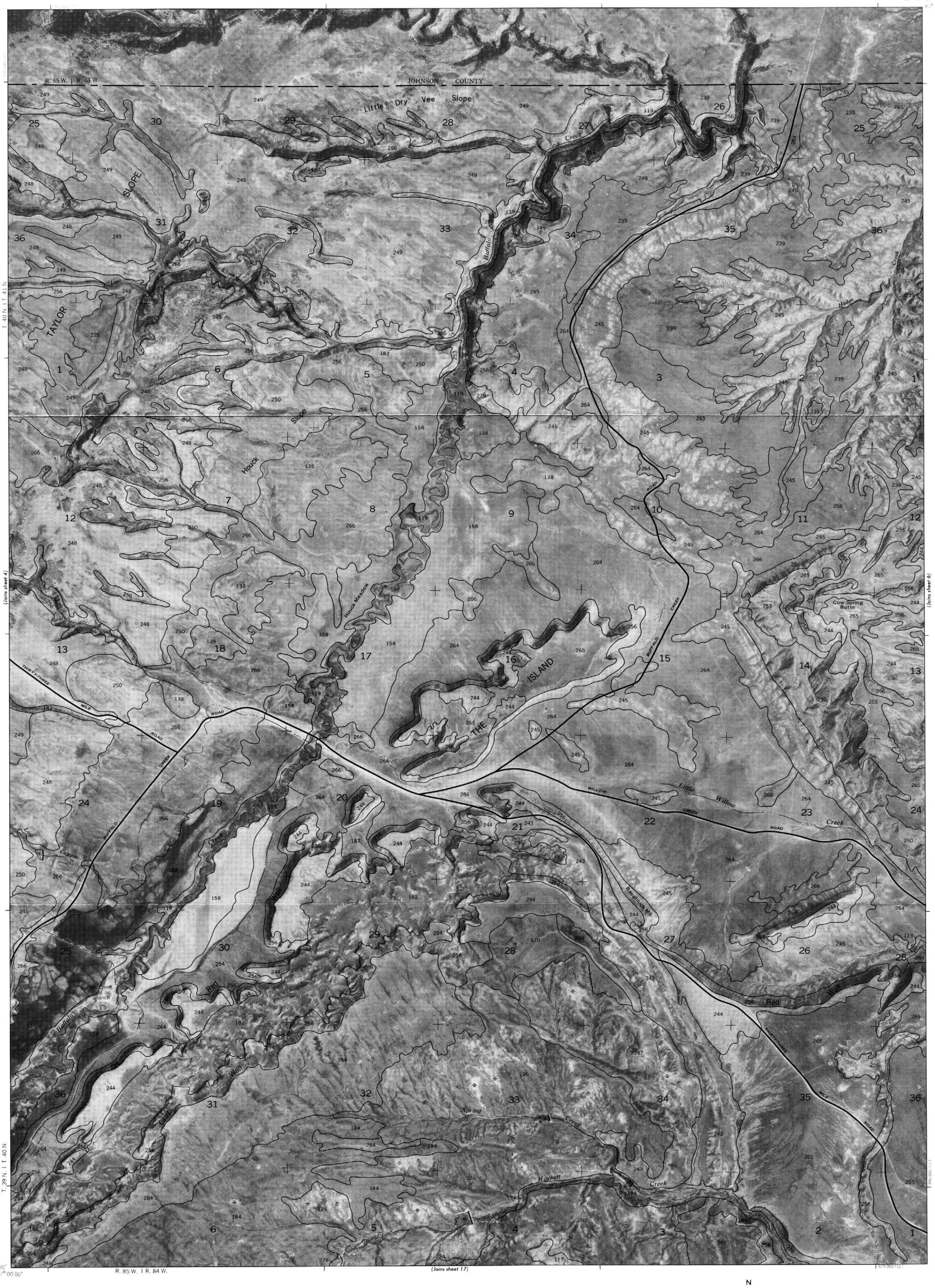
SHEET NO. 4
SOIL SURVEY OF NATRONA COUNTY AREA, WYOMING



5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000
NATRONA COUNTY AREA, WYOMING NO. 4

N

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

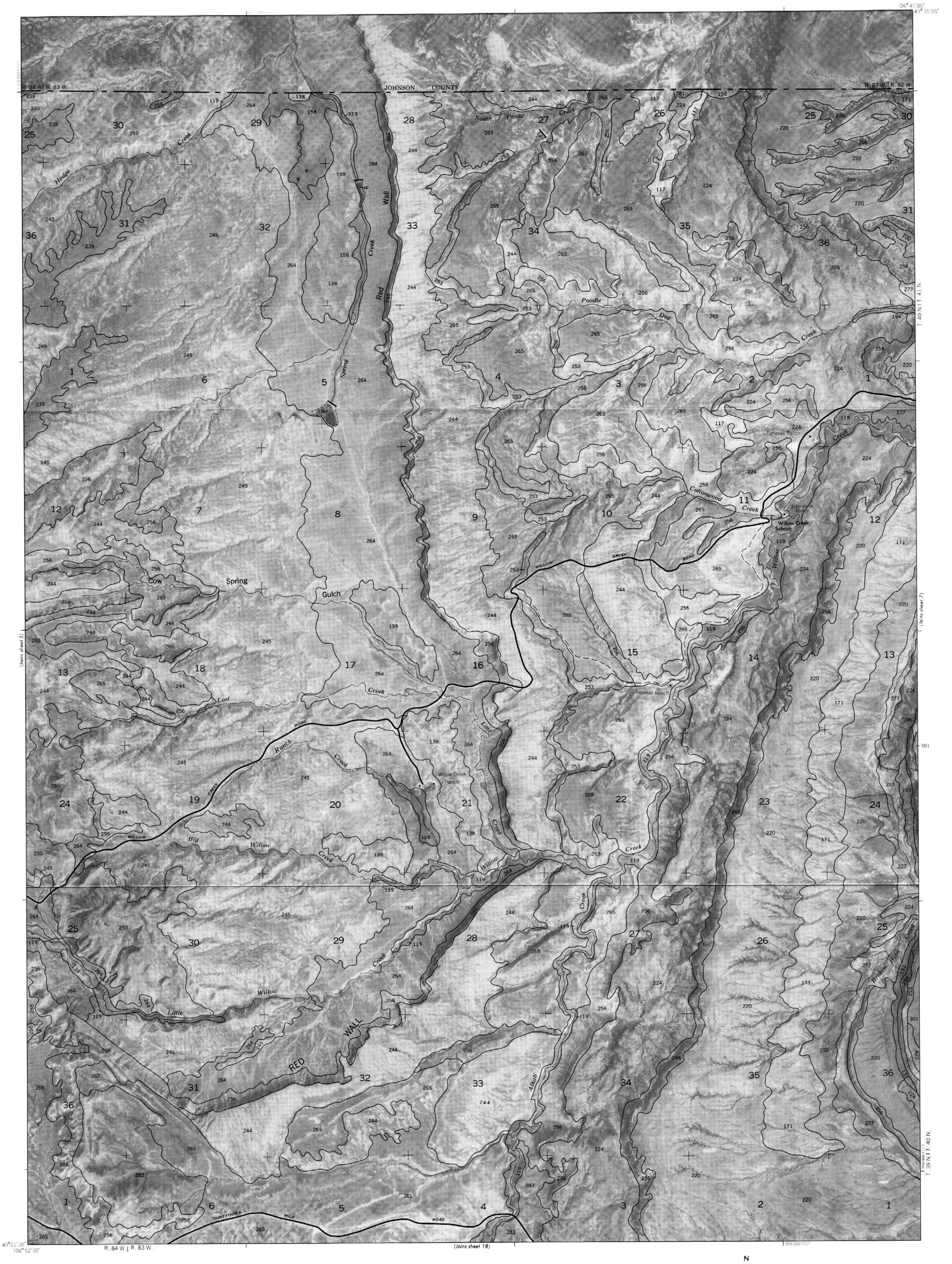


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

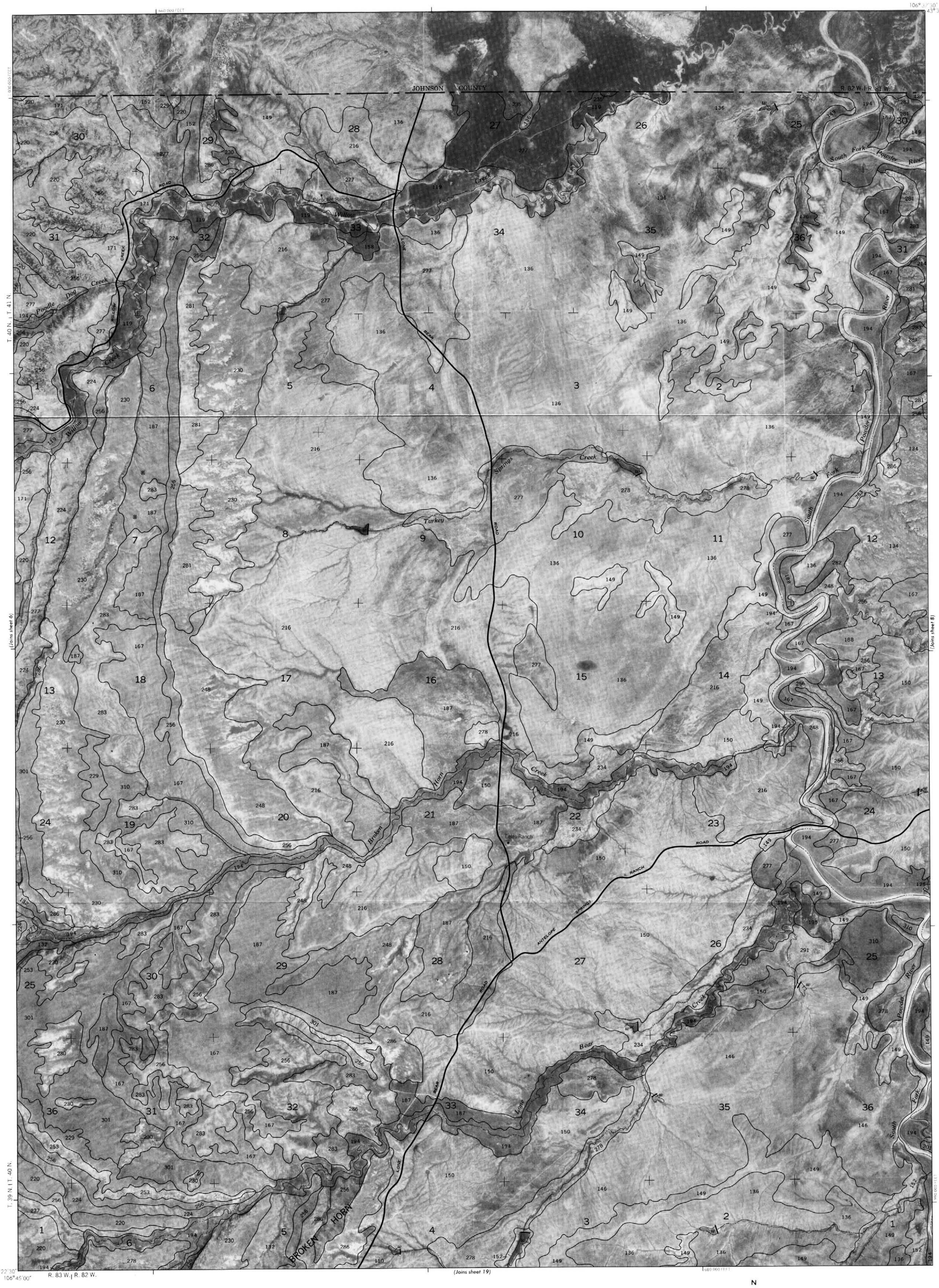
N

NATRONA COUNTY AREA, WYOMING NO. 5



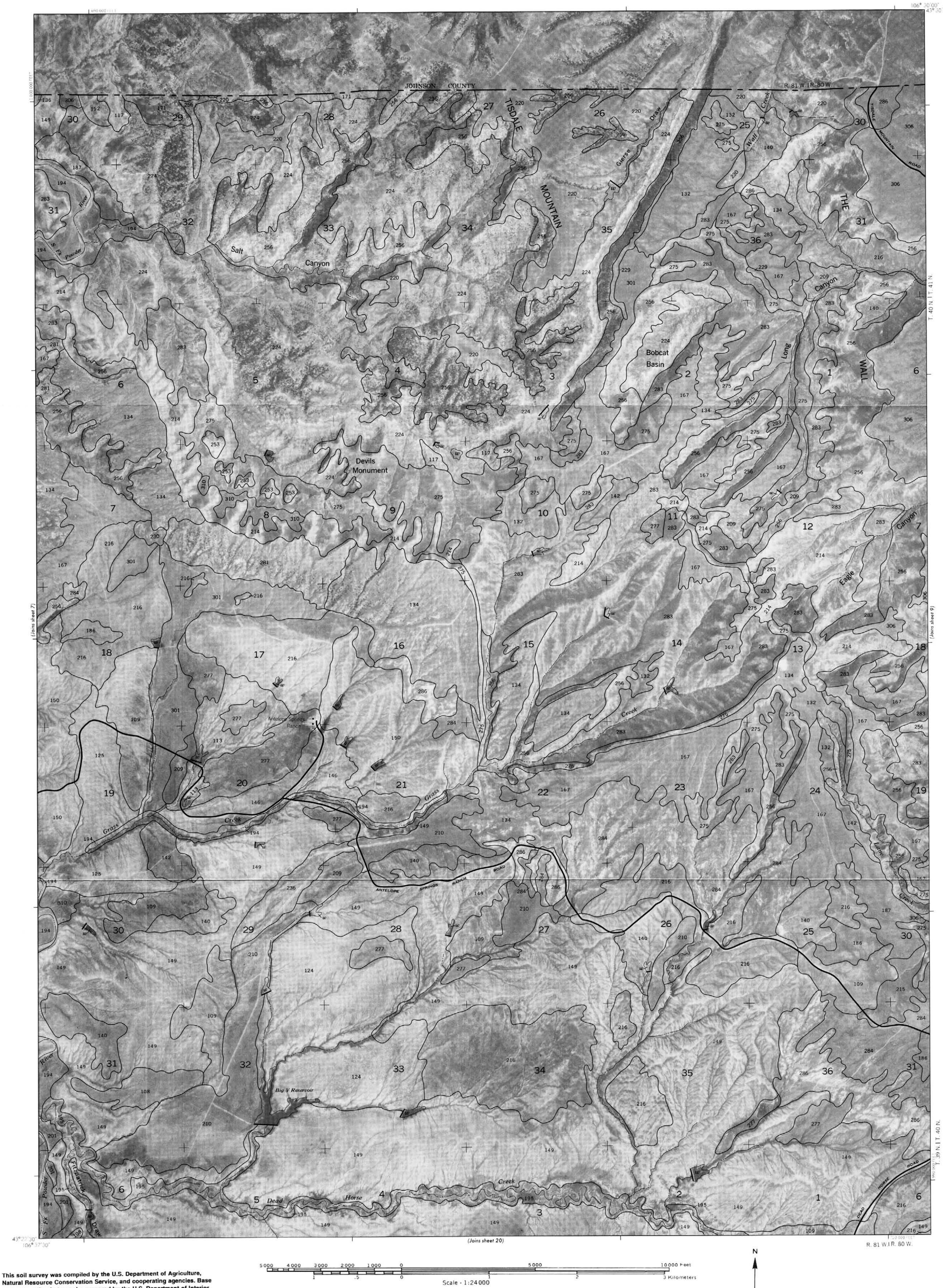
Scale - 1:24 000

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



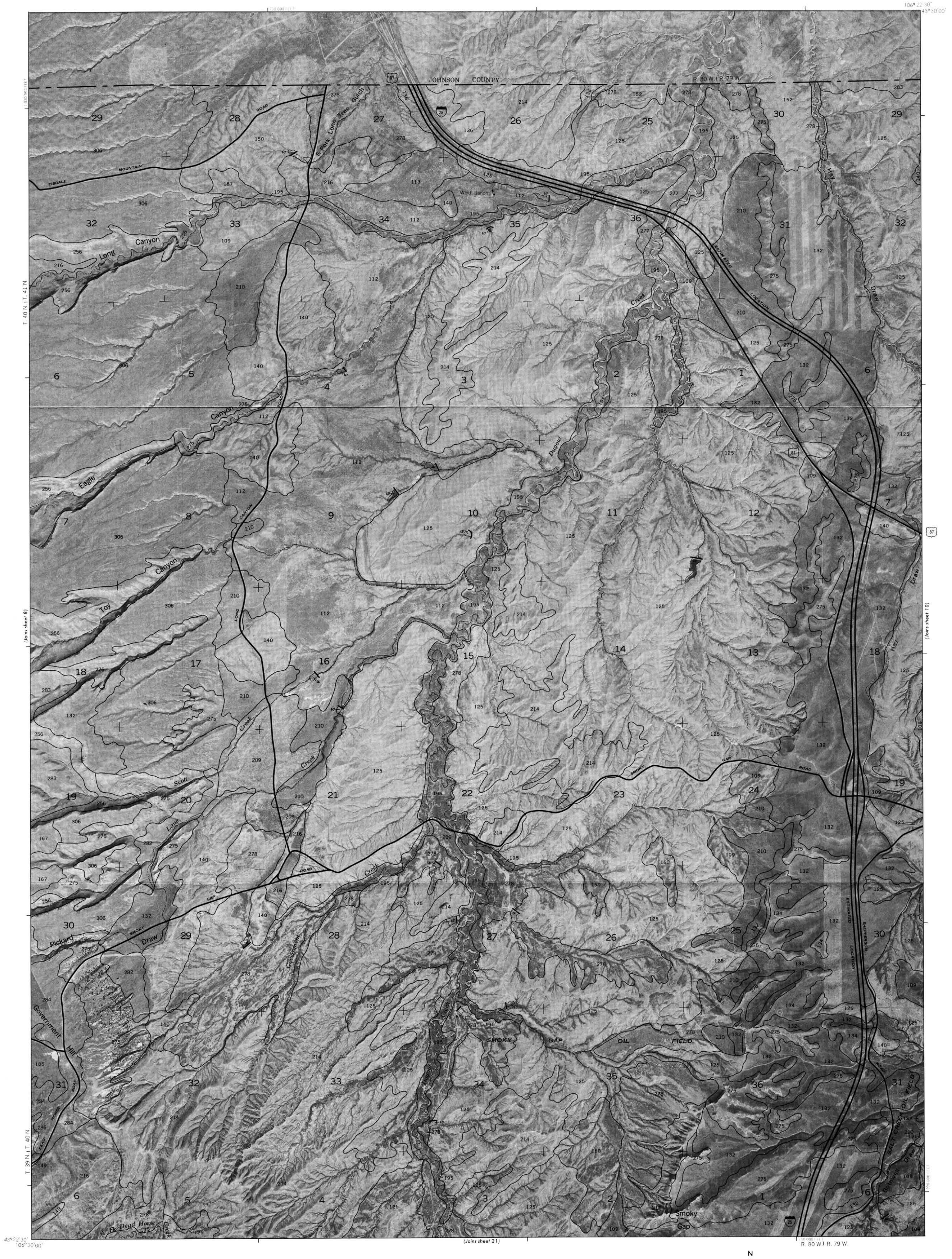
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 7



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 8

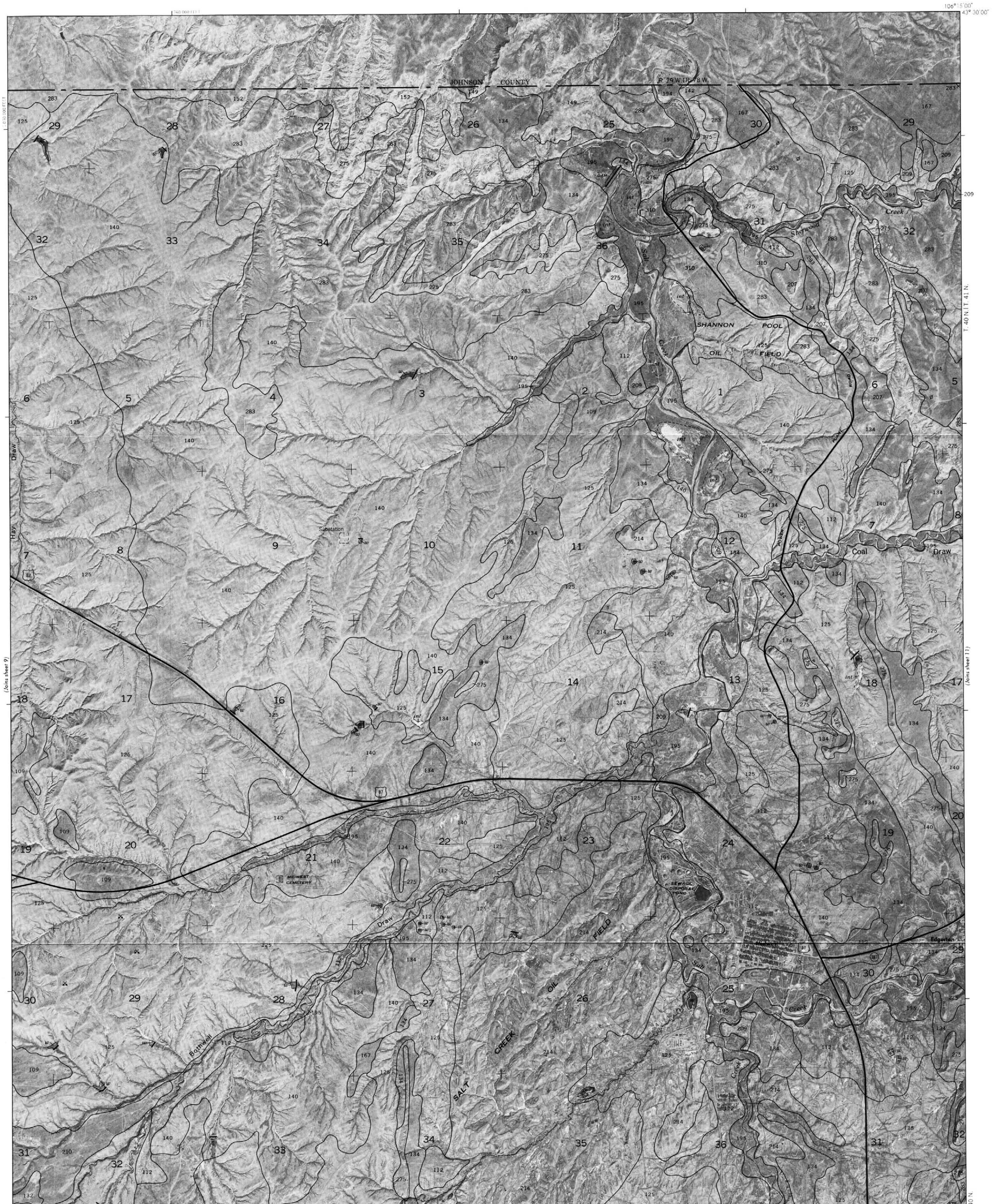


5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale 1:24 000

N

NATRONA COUNTY AREA, WYOMING NO. 9

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

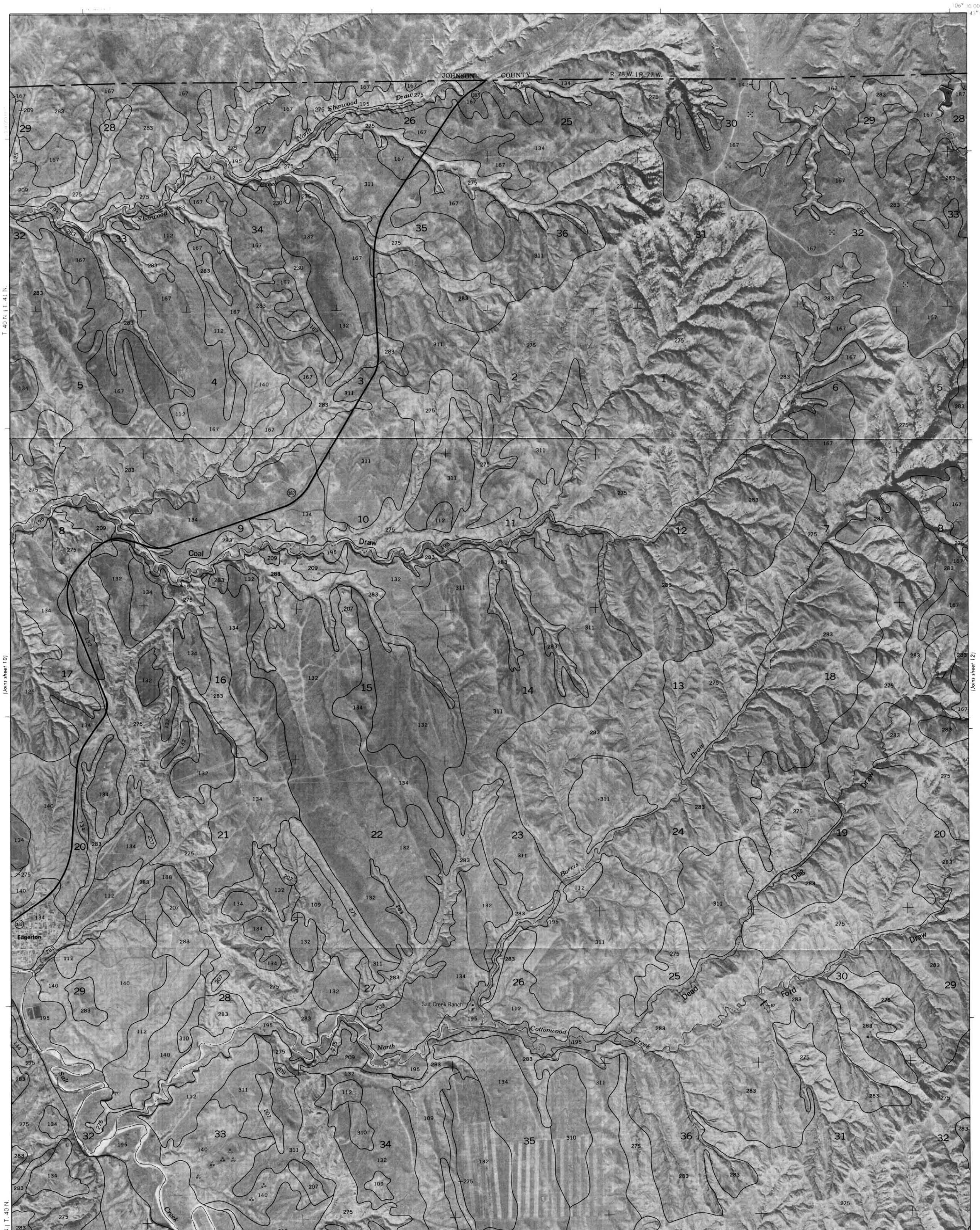


5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 10

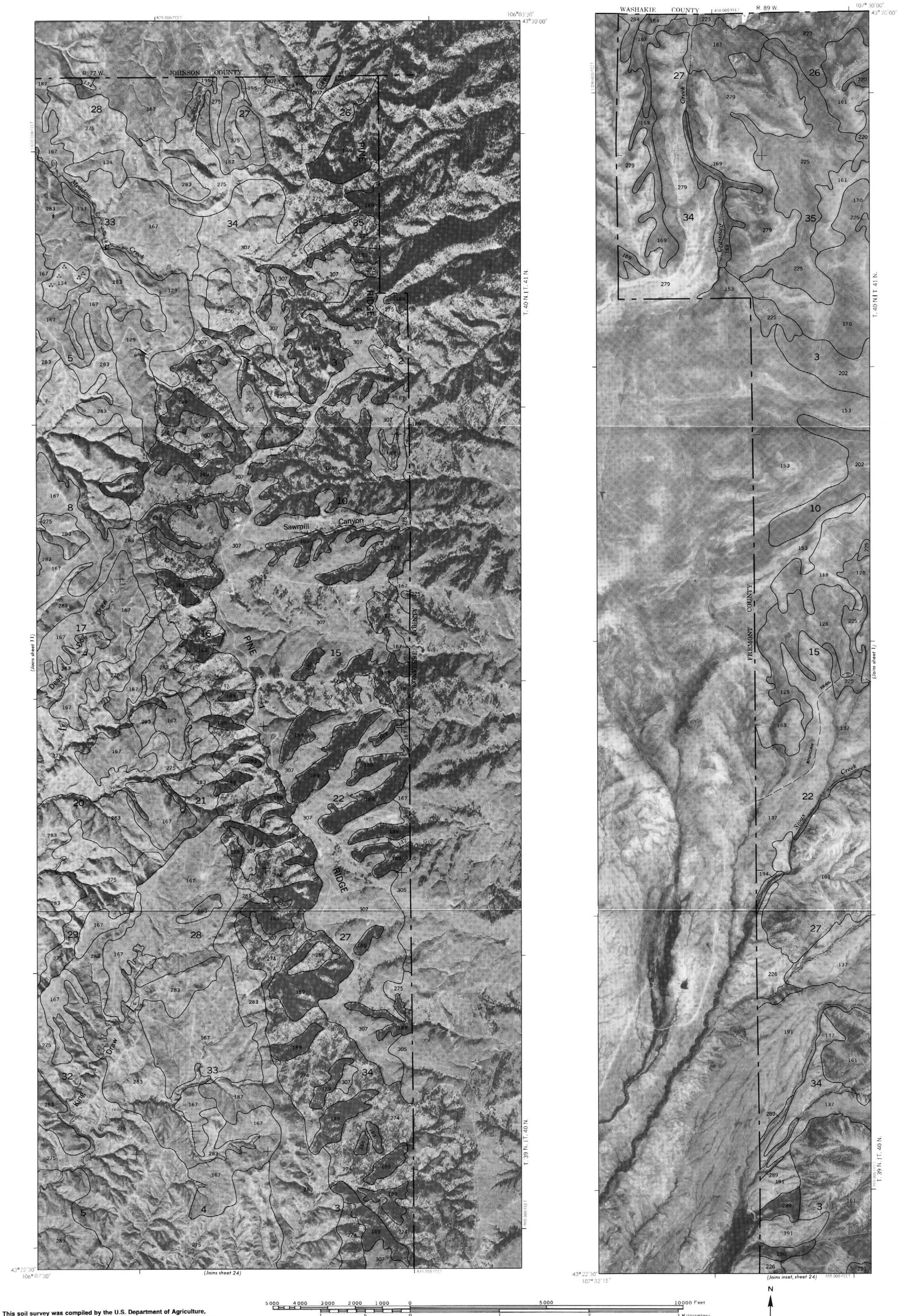


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

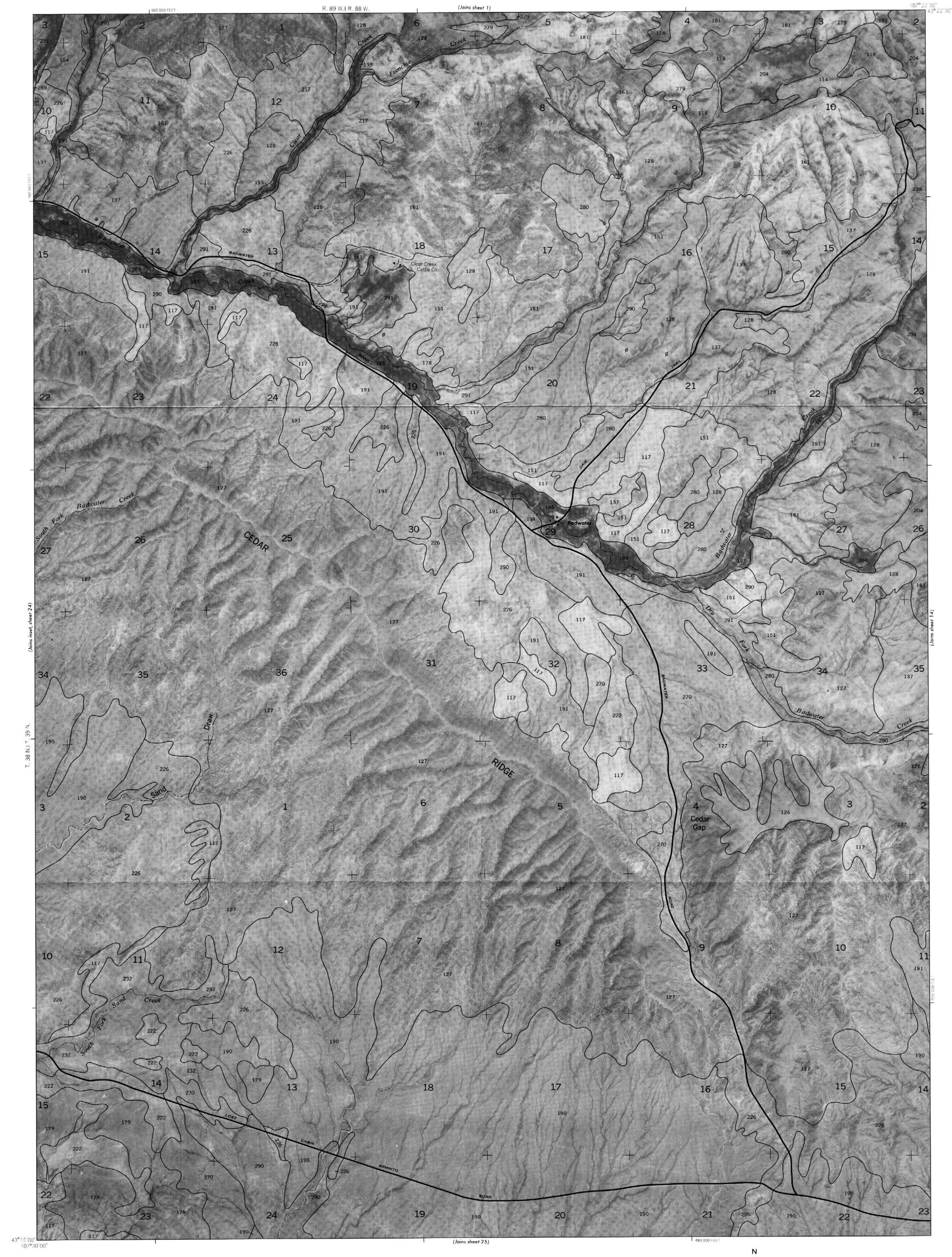
5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

NATRONA COUNTY AREA, WYOMING NO. 11



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

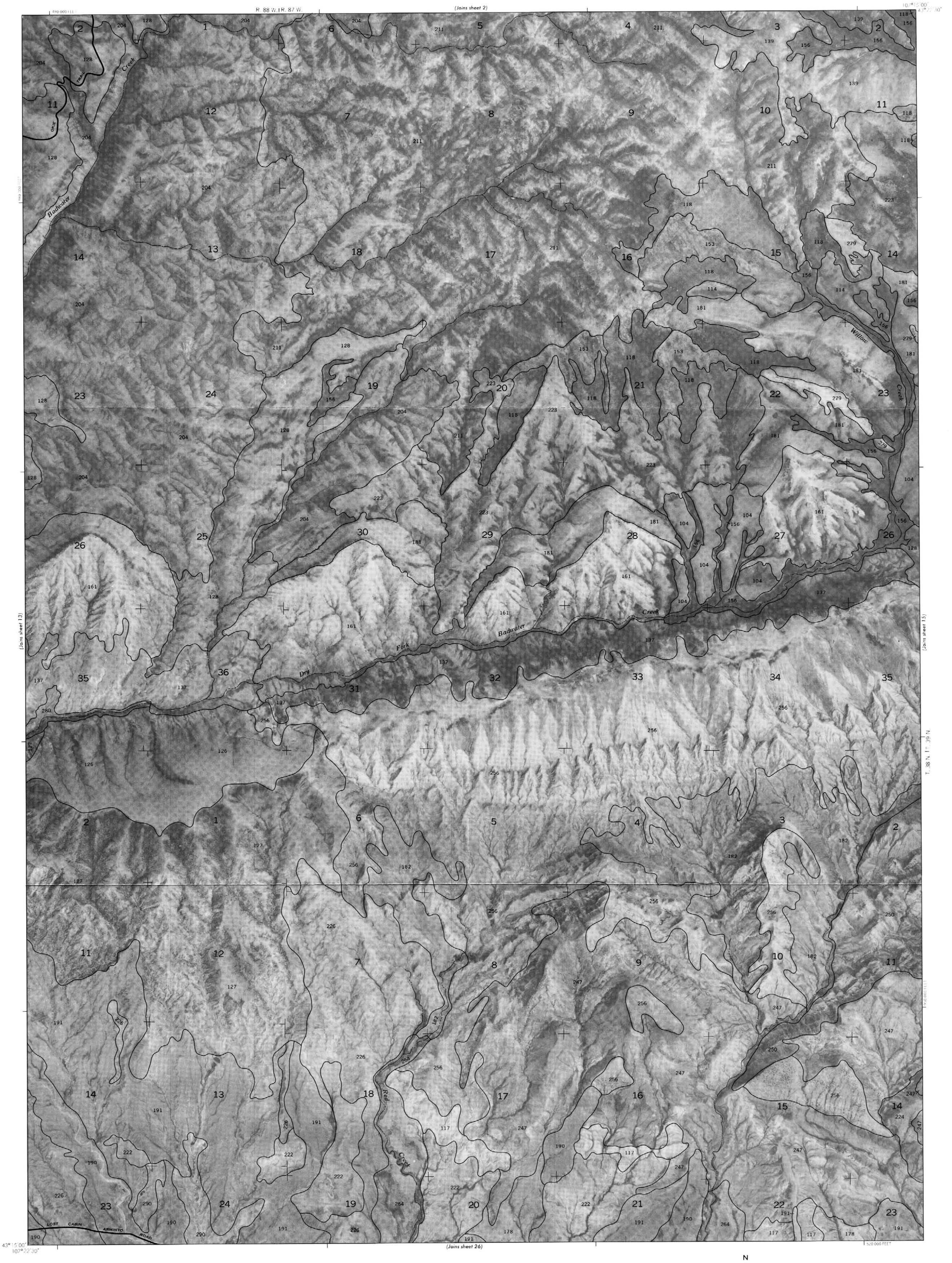


5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 14
SOIL SURVEY OF NATRONA COUNTY AREA, WYOMING



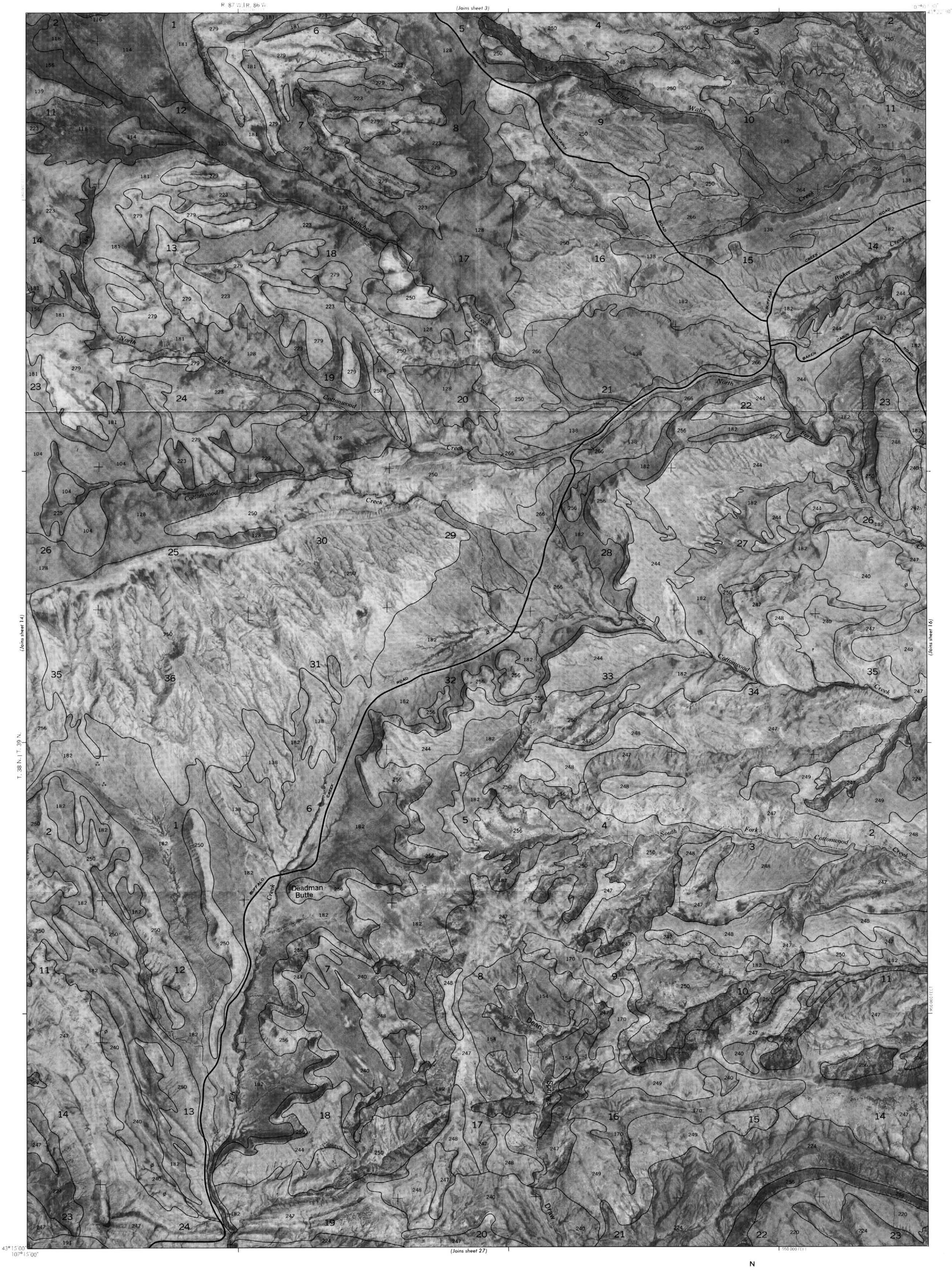
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

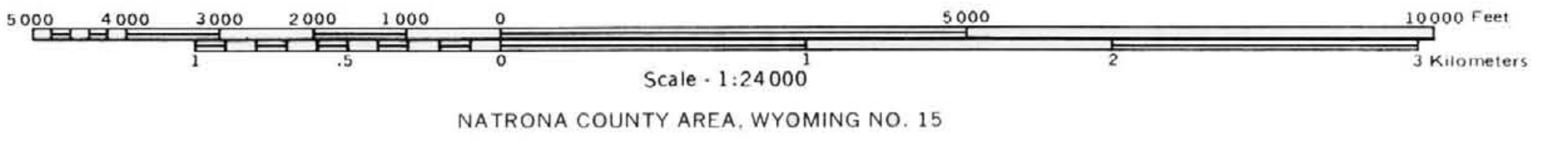
NATRONA COUNTY AREA, WYOMING NO. 14

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 15
SOIL SURVEY OF NATRONA COUNTY AREA, WYOMING

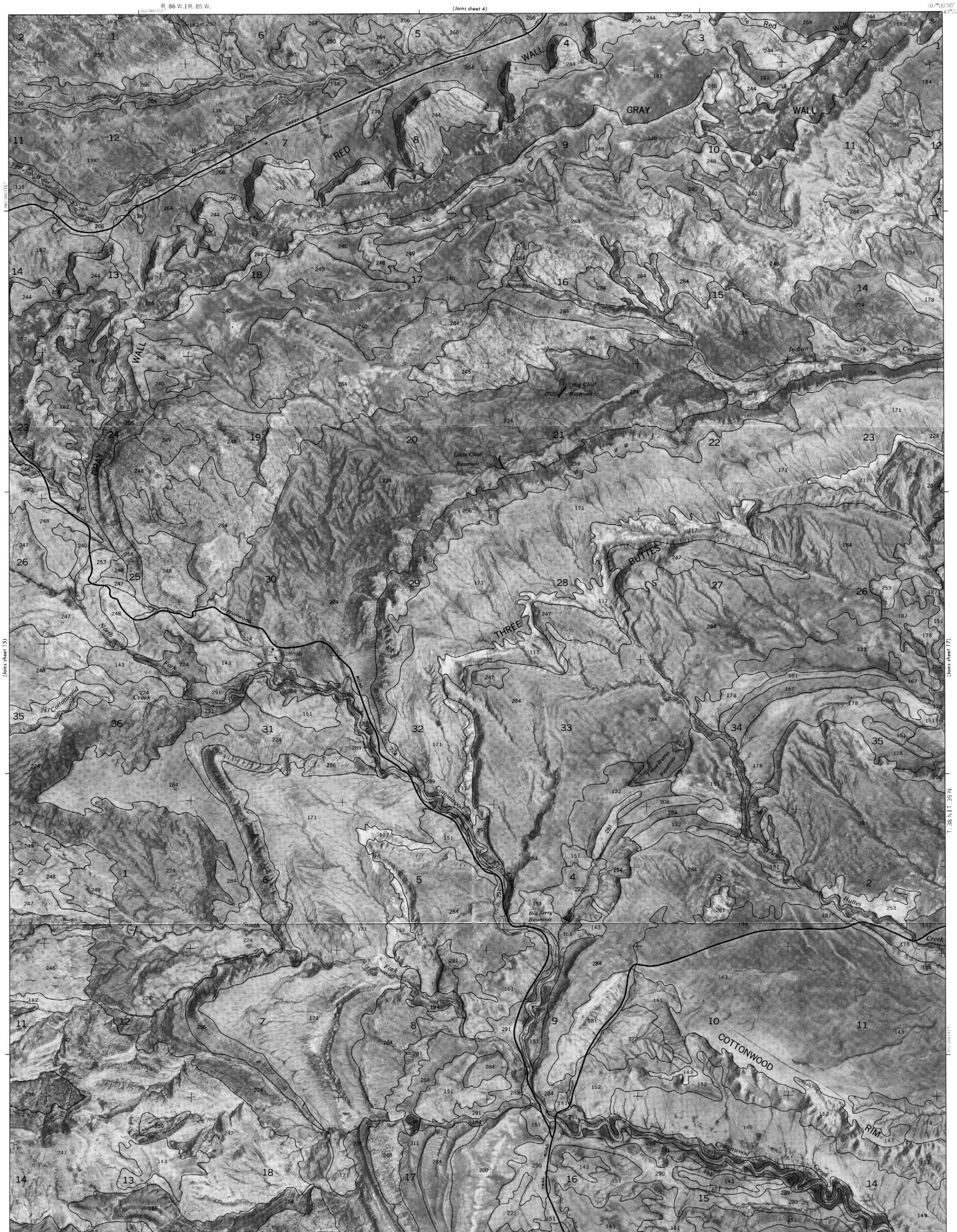


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



Scale - 1:24000

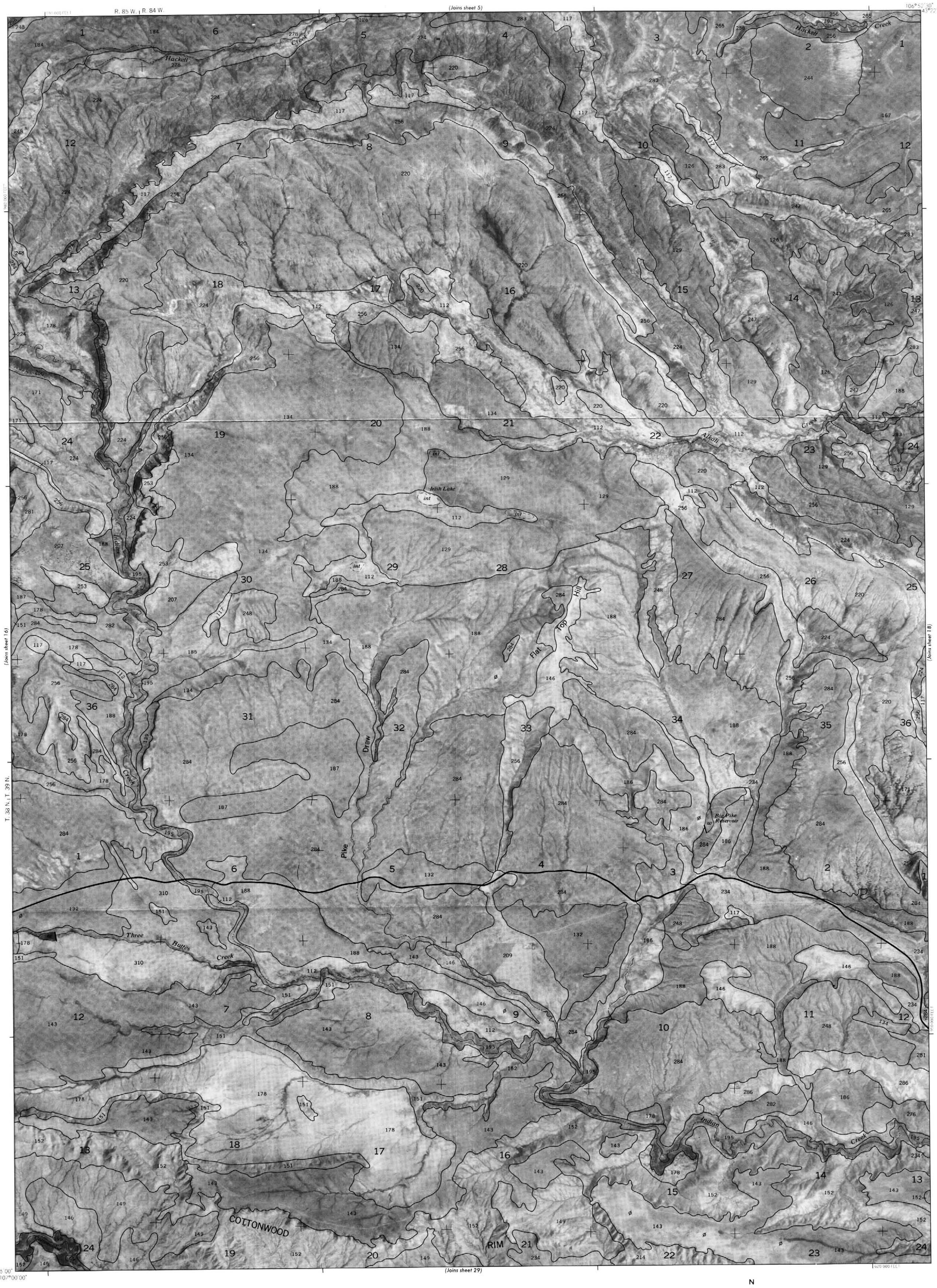
NATRONA COUNTY AREA, WYOMING NO. 15



Scale - 1:24 000

NATRONA COUNTY AREA, WYOMING NO. 16

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

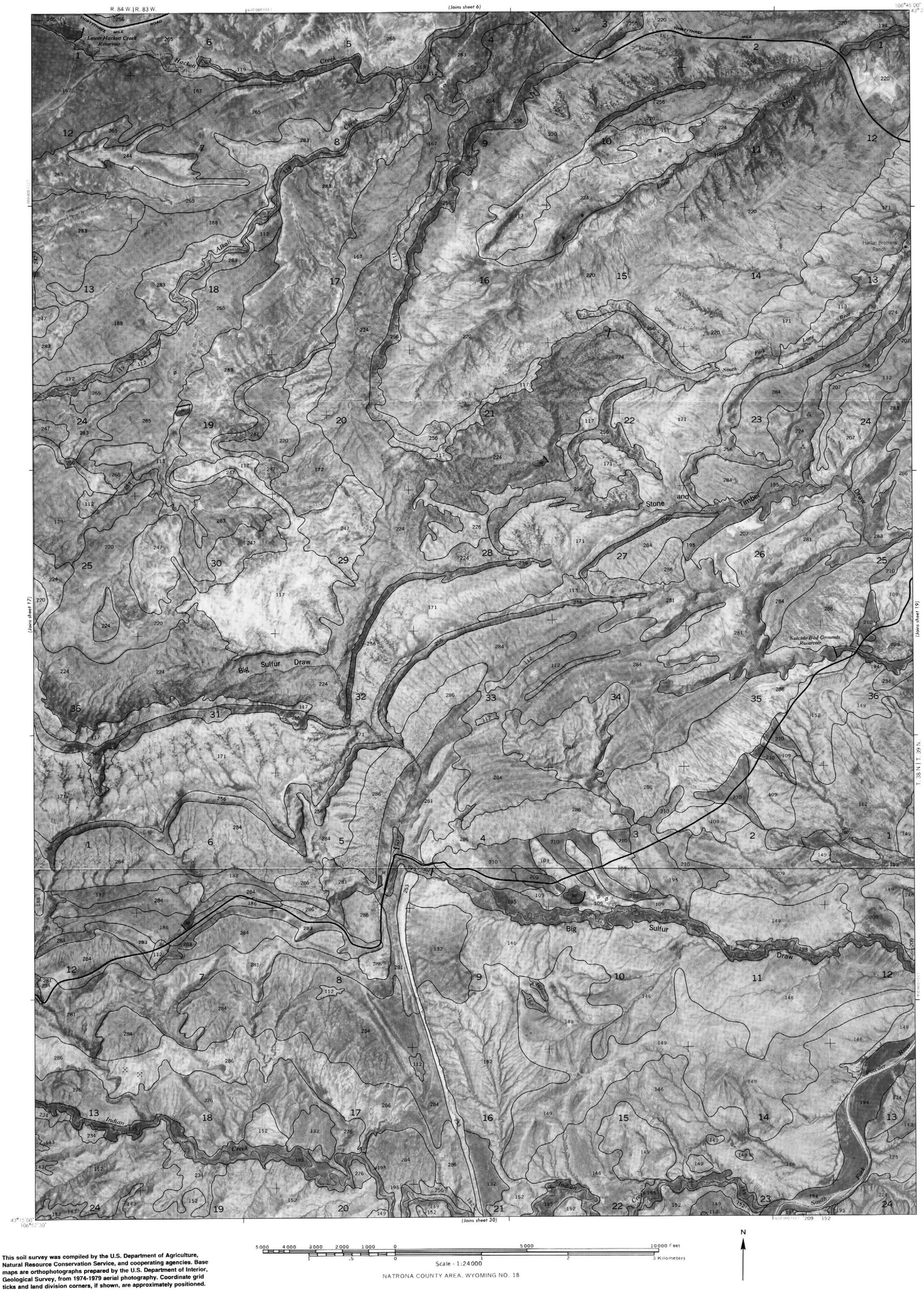


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

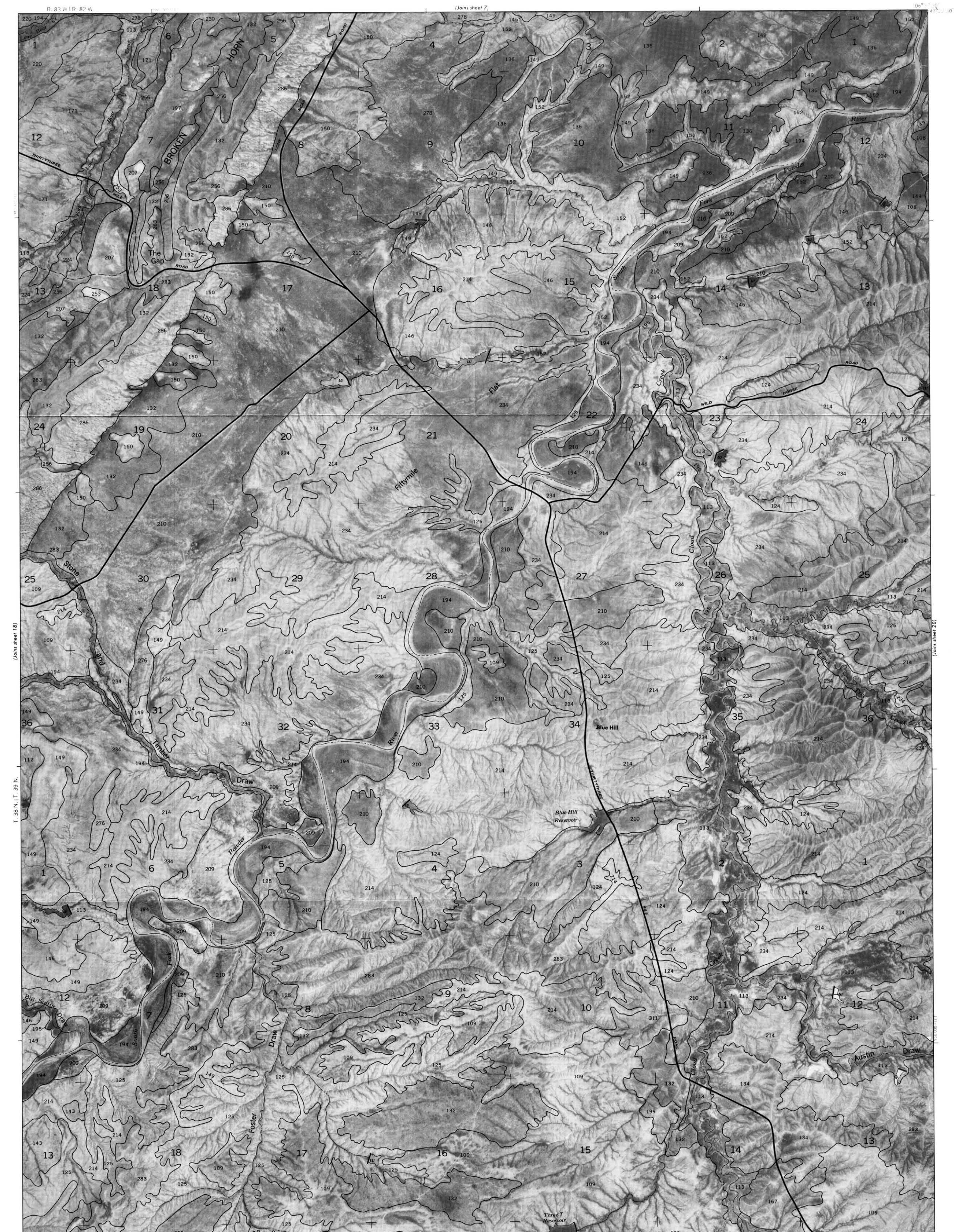
N

NATRONA COUNTY AREA, WYOMING NO. 17



NATRONA COUNTY AREA, WYOMING NO. 18

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



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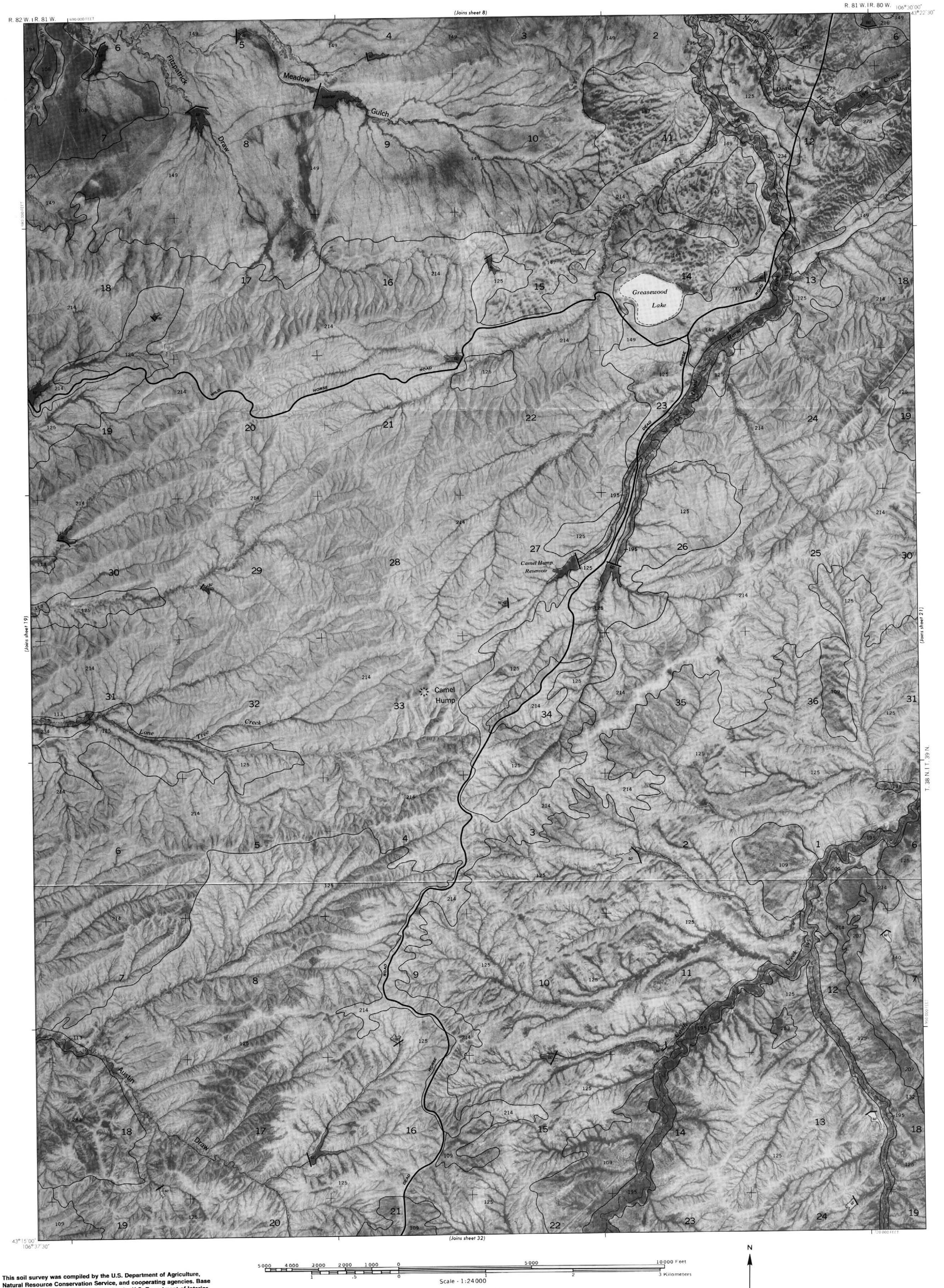
5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

NATRONA COUNTY AREA, WYOMING NO. 19

N

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 20
SOIL SURVEY OF NATRONA COUNTY AREA, WYOMING

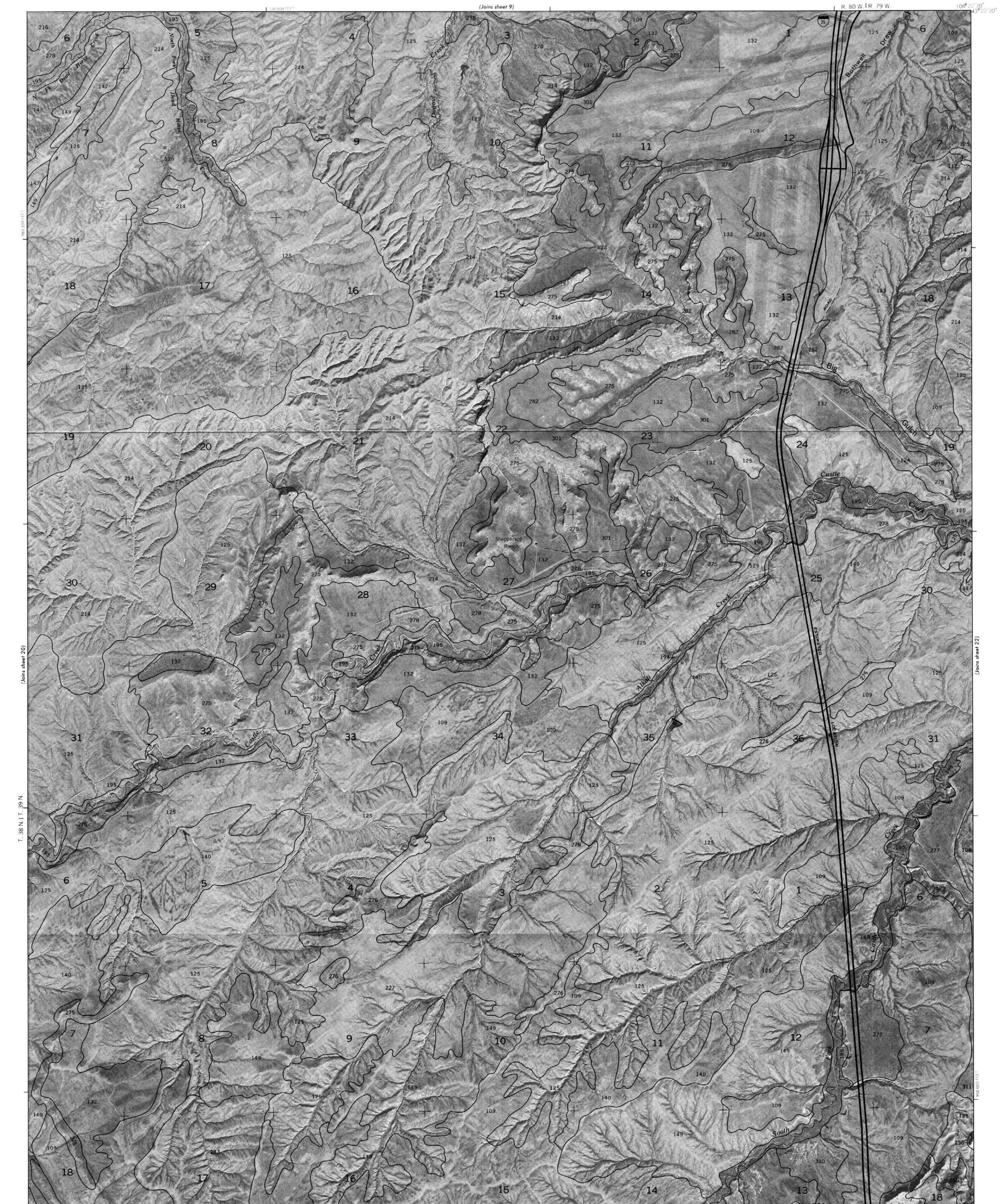


NATRONA COUNTY AREA, WYOMING NO. 20

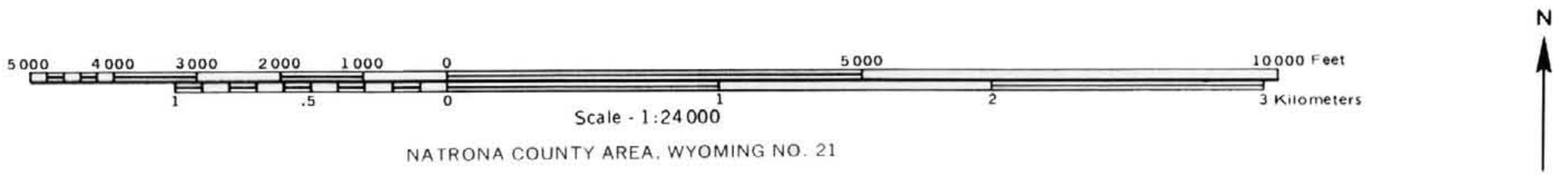
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

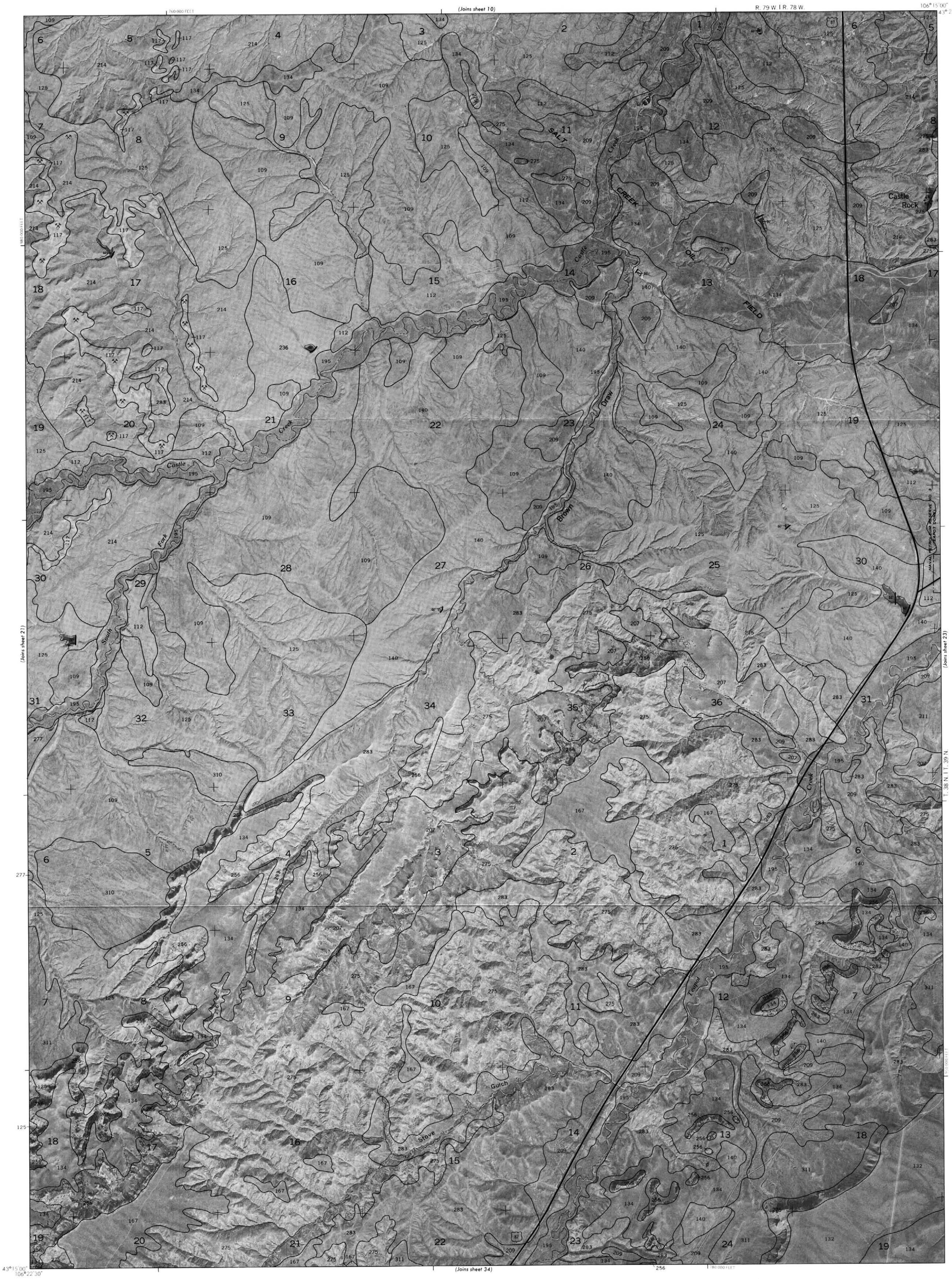
SHEET NO. 21
SOIL SURVEY OF NATRONA COUNTY AREA, WYOMING



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



NATRONA COUNTY AREA, WYOMING NO. 21



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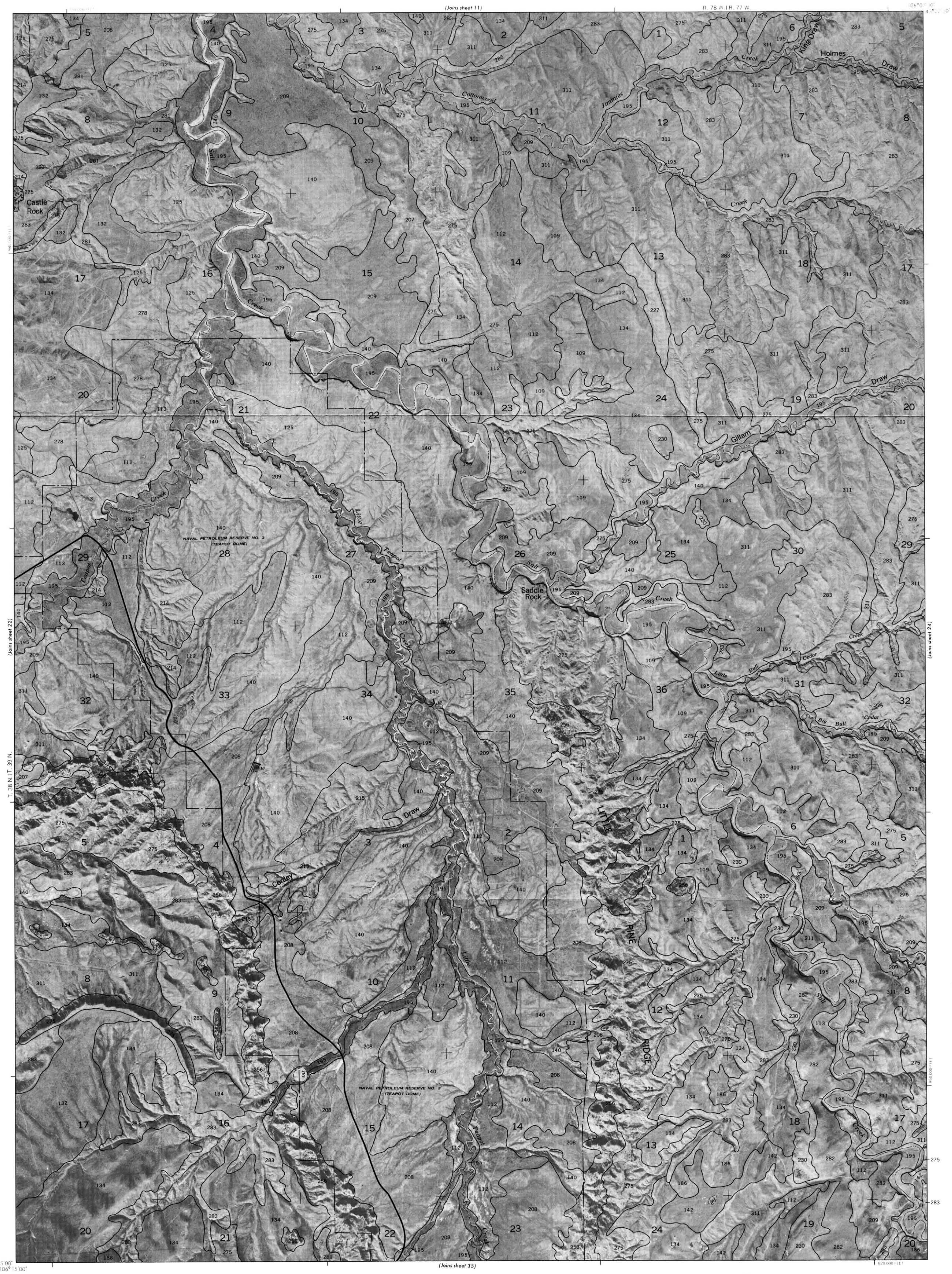
5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

NATRONA COUNTY AREA, WYOMING NO. 22



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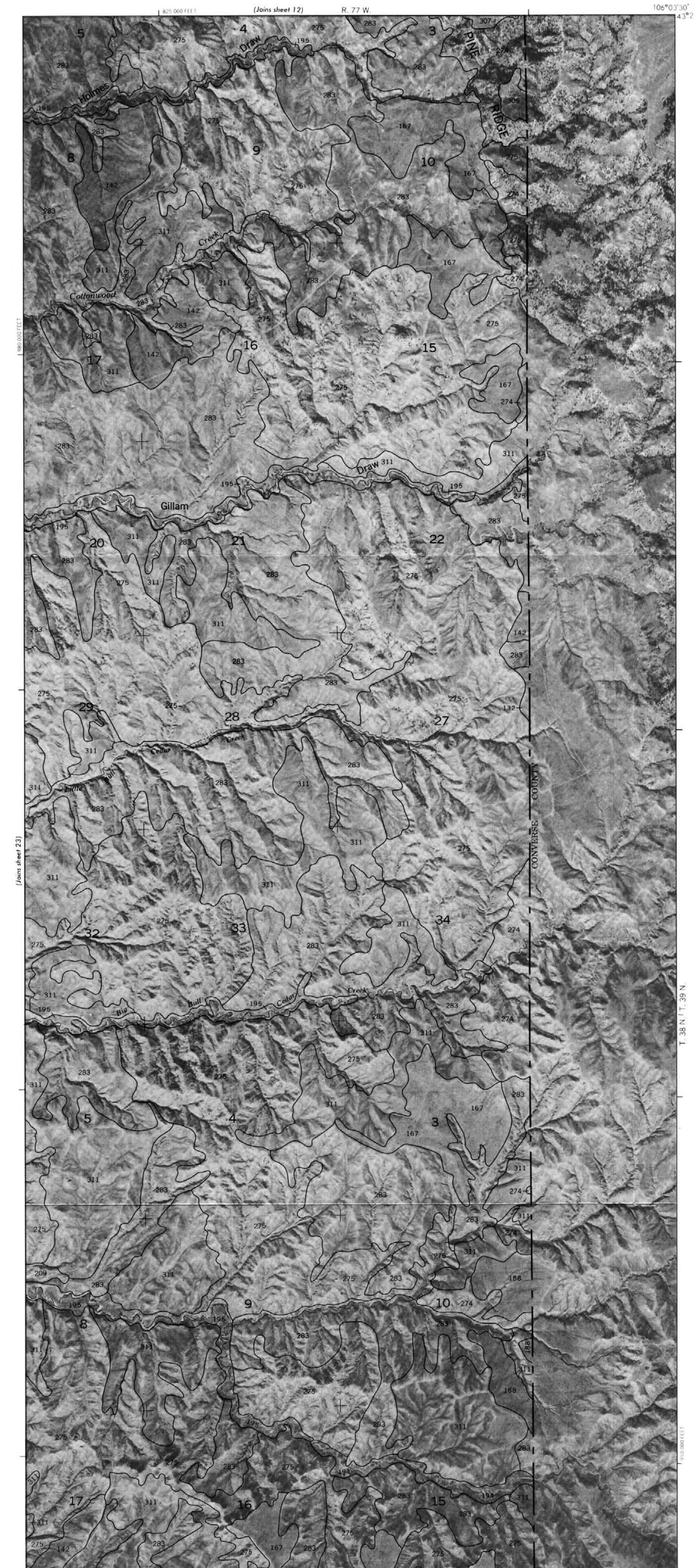
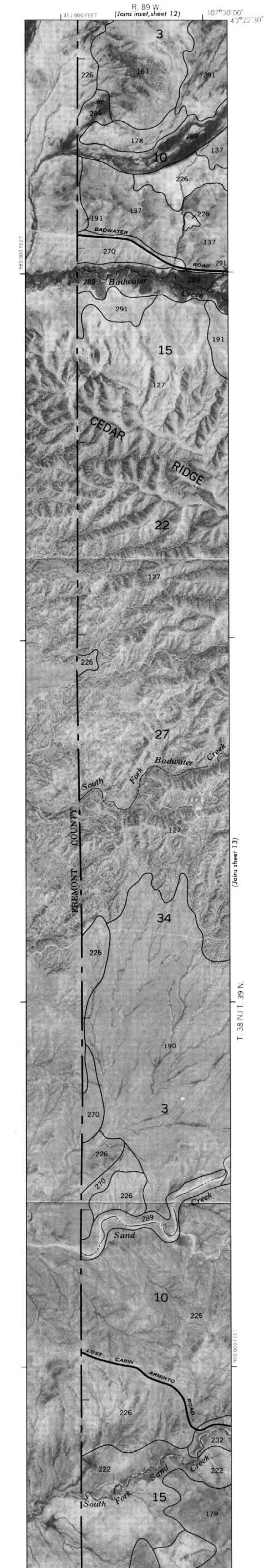
5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

NATRONA COUNTY AREA, WYOMING NO. 23





5000 4000 3000 2000 1000 0 5000 10000 Feet

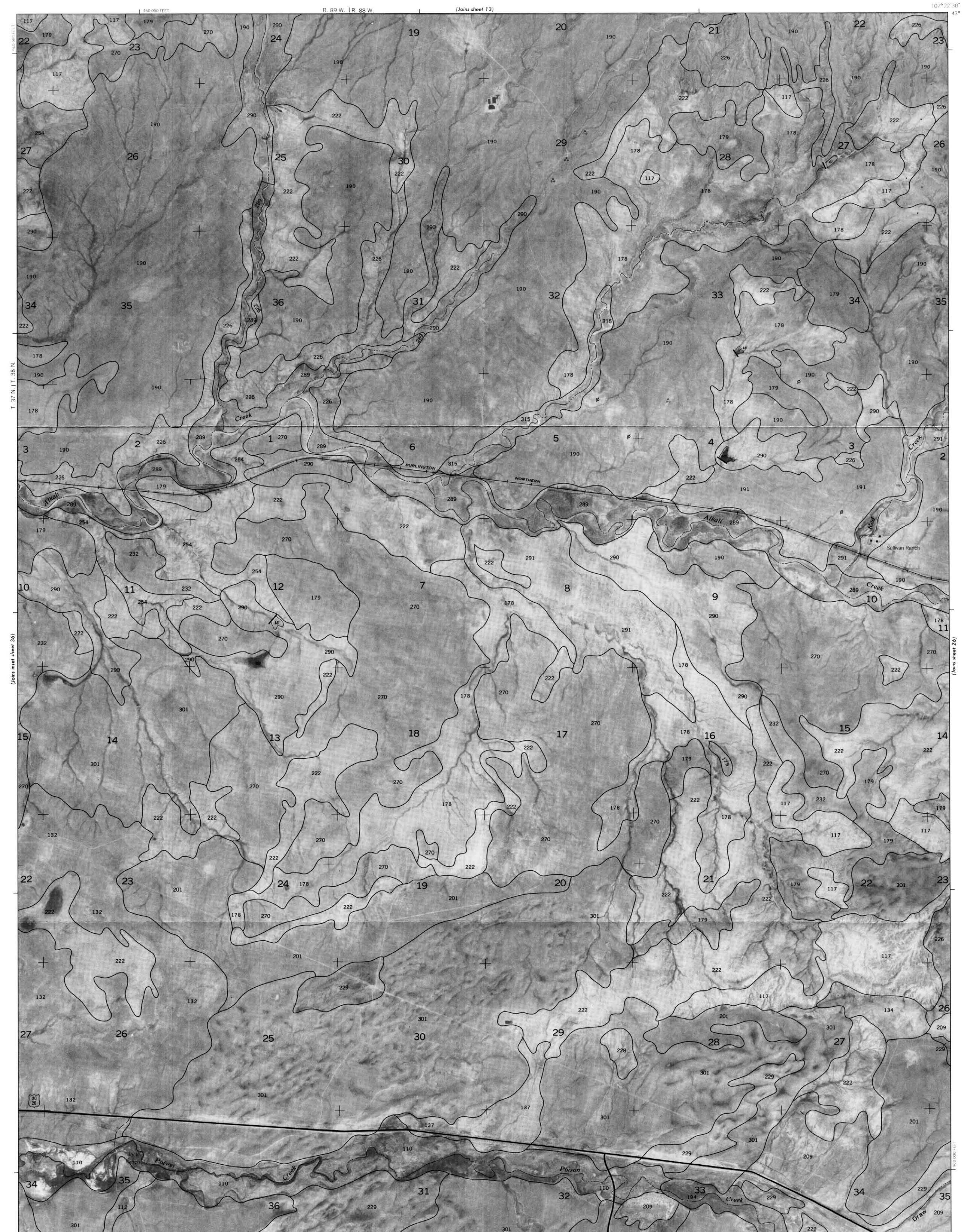
1 .5 0 1 2 3 Kilometers

Scale - 1:24 000

N

NATRONA COUNTY AREA, WYOMING NO. 24

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



5000 4000 3000 2000 1000 0 5000 10000 Feet

1 .5 0 1 2 3 Kilometers

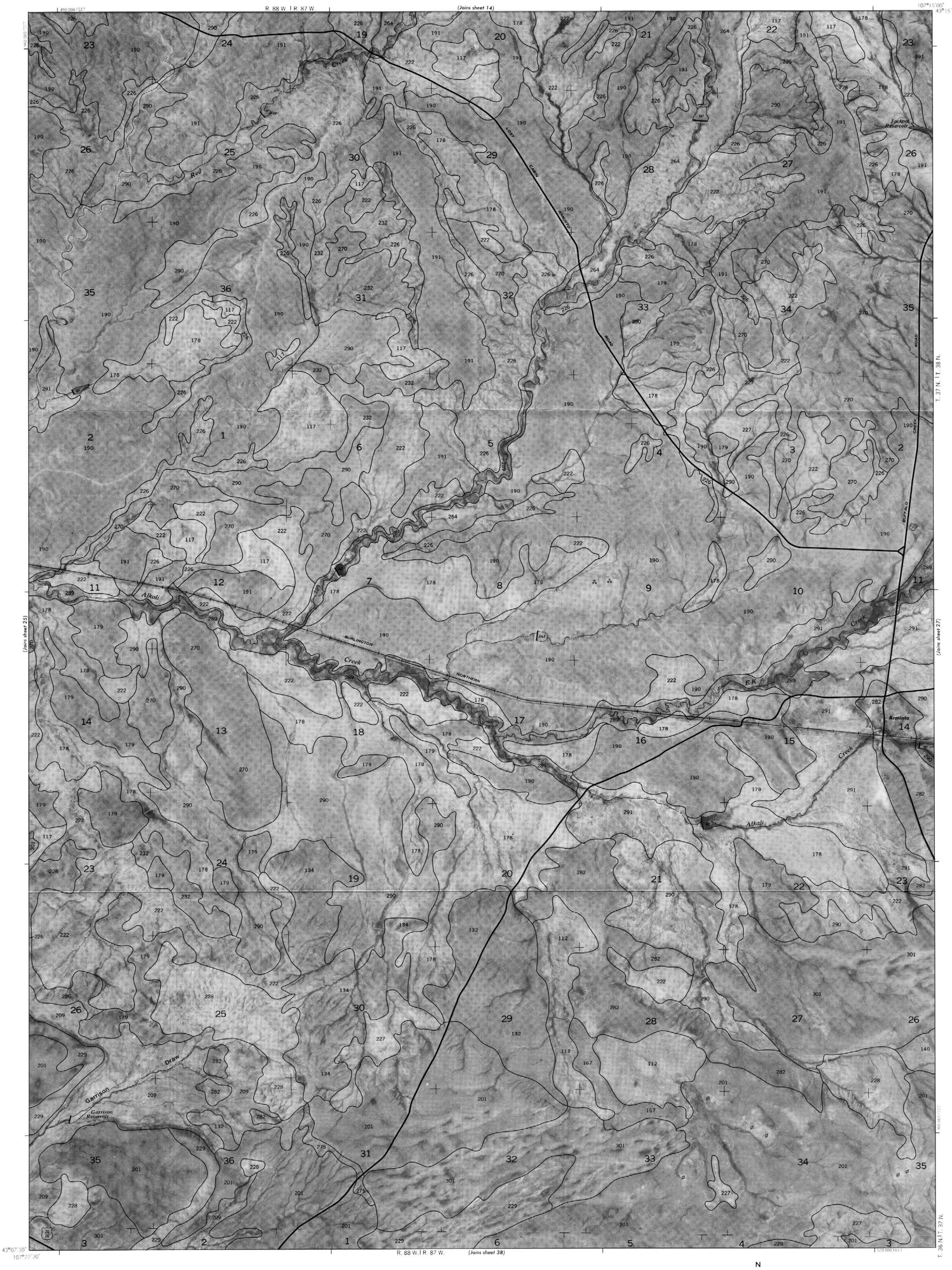
Scale - 1:24 000

N

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

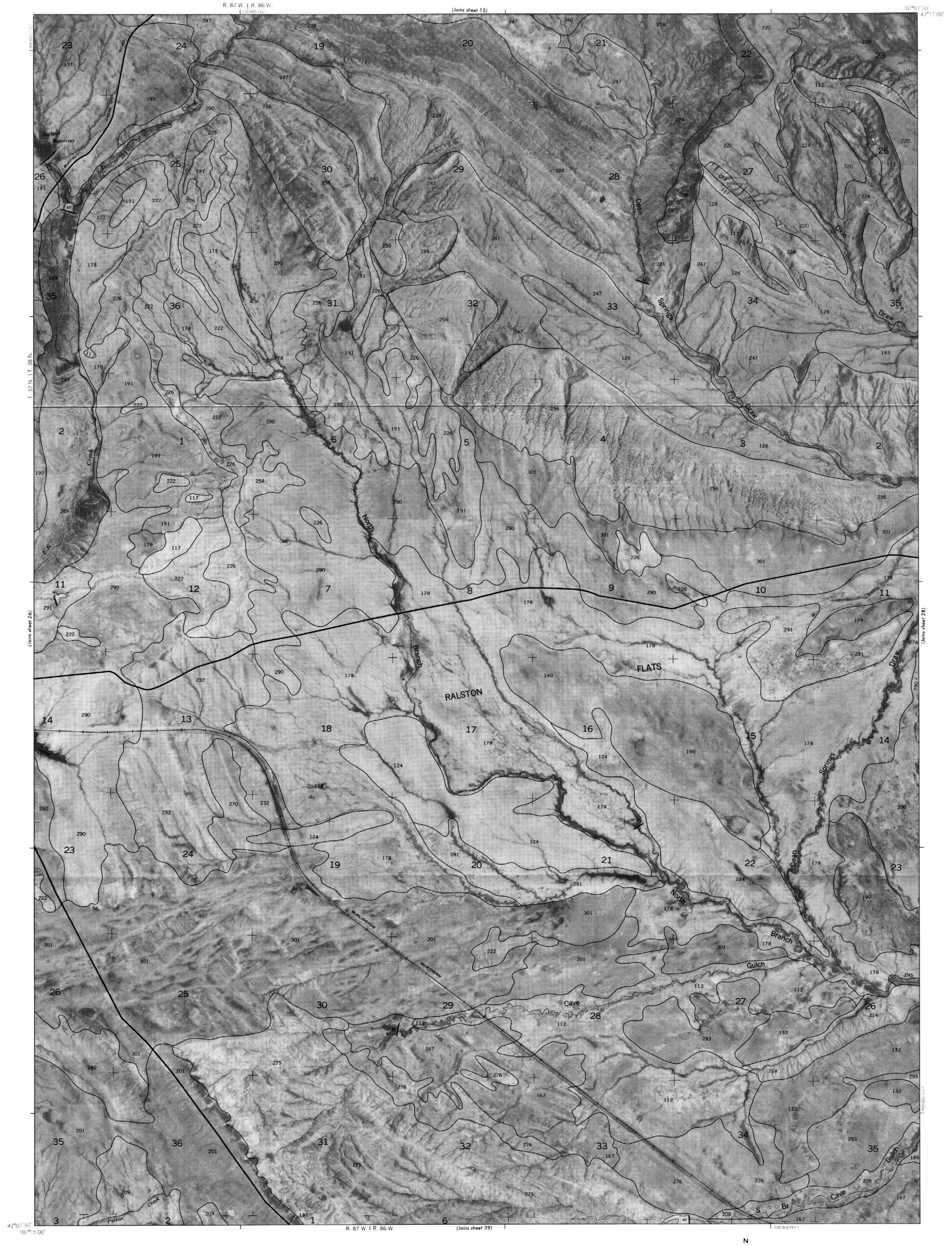
SHEET NO. 26
SOIL SURVEY OF NATRONA COUNTY AREA, WYOMING



5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000
N

NATRONA COUNTY AREA, WYOMING NO. 26

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

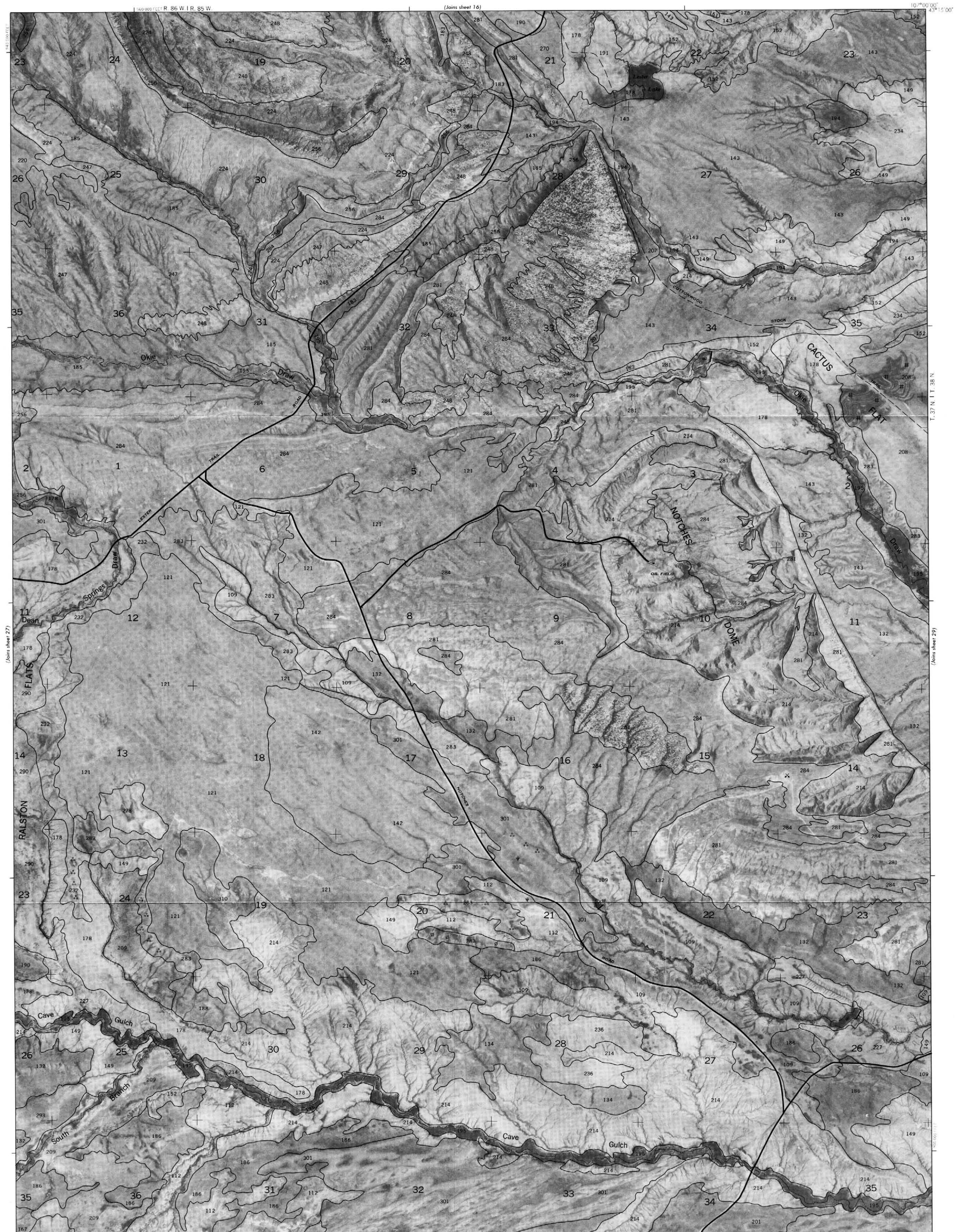


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

NATRONA COUNTY AREA, WYOMING NO. 27



5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

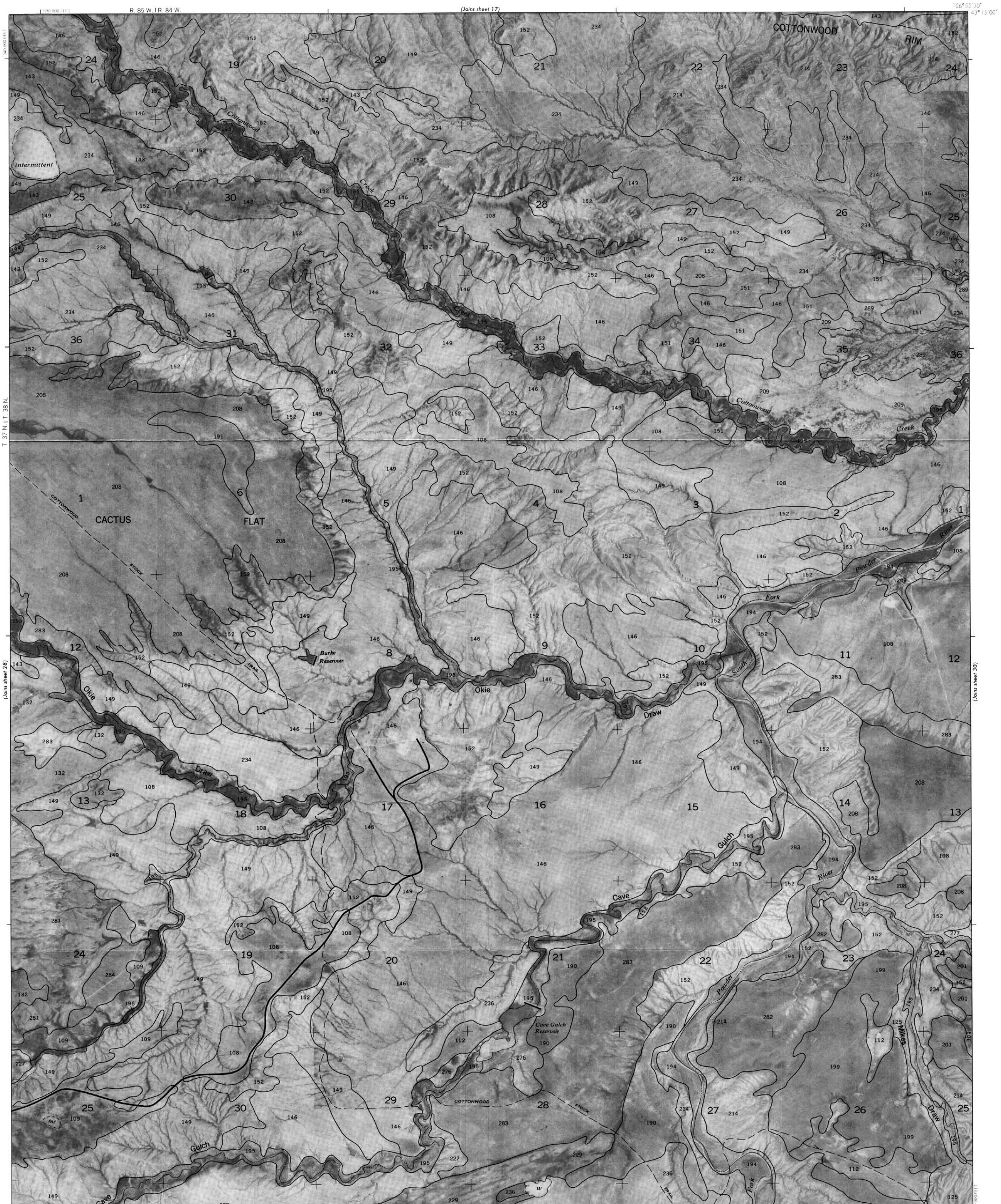
N

NATRONA COUNTY AREA, WYOMING NO. 28

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 29
SOIL SURVEY OF NATRONA COUNTY AREA, WYOMING

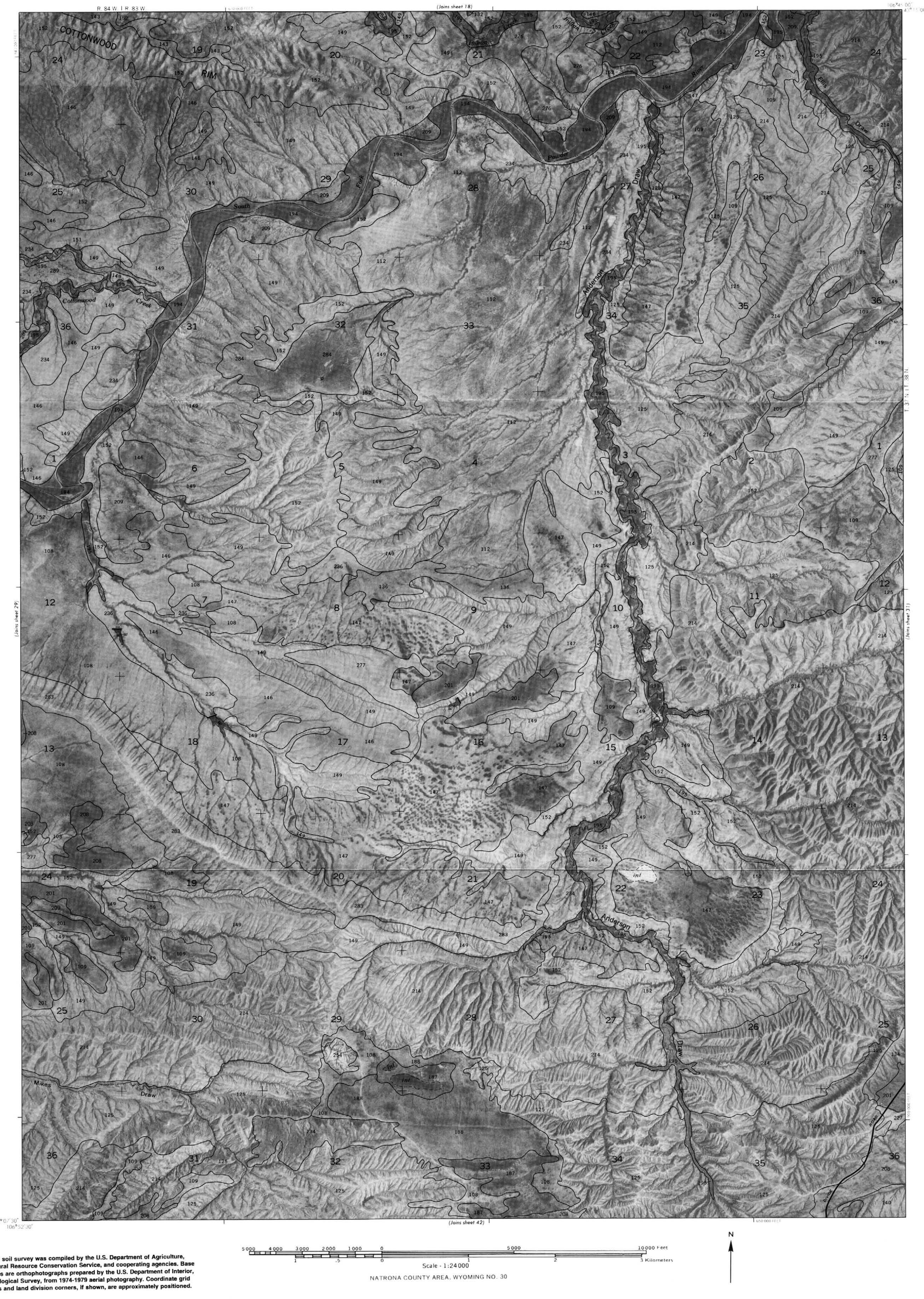


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

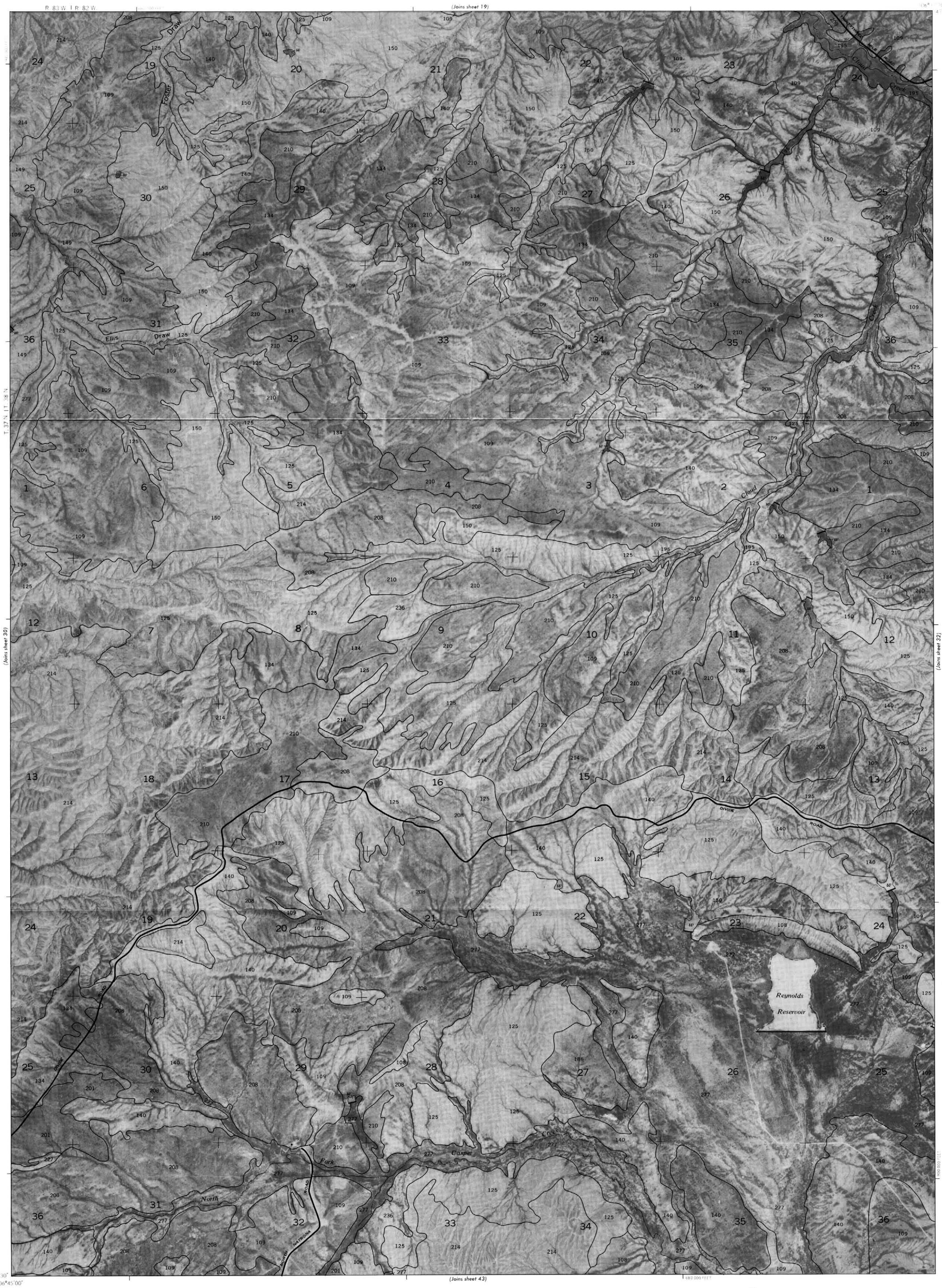
N

NATRONA COUNTY AREA, WYOMING NO. 29



NATRONA COUNTY AREA, WYOMING NO. 30

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



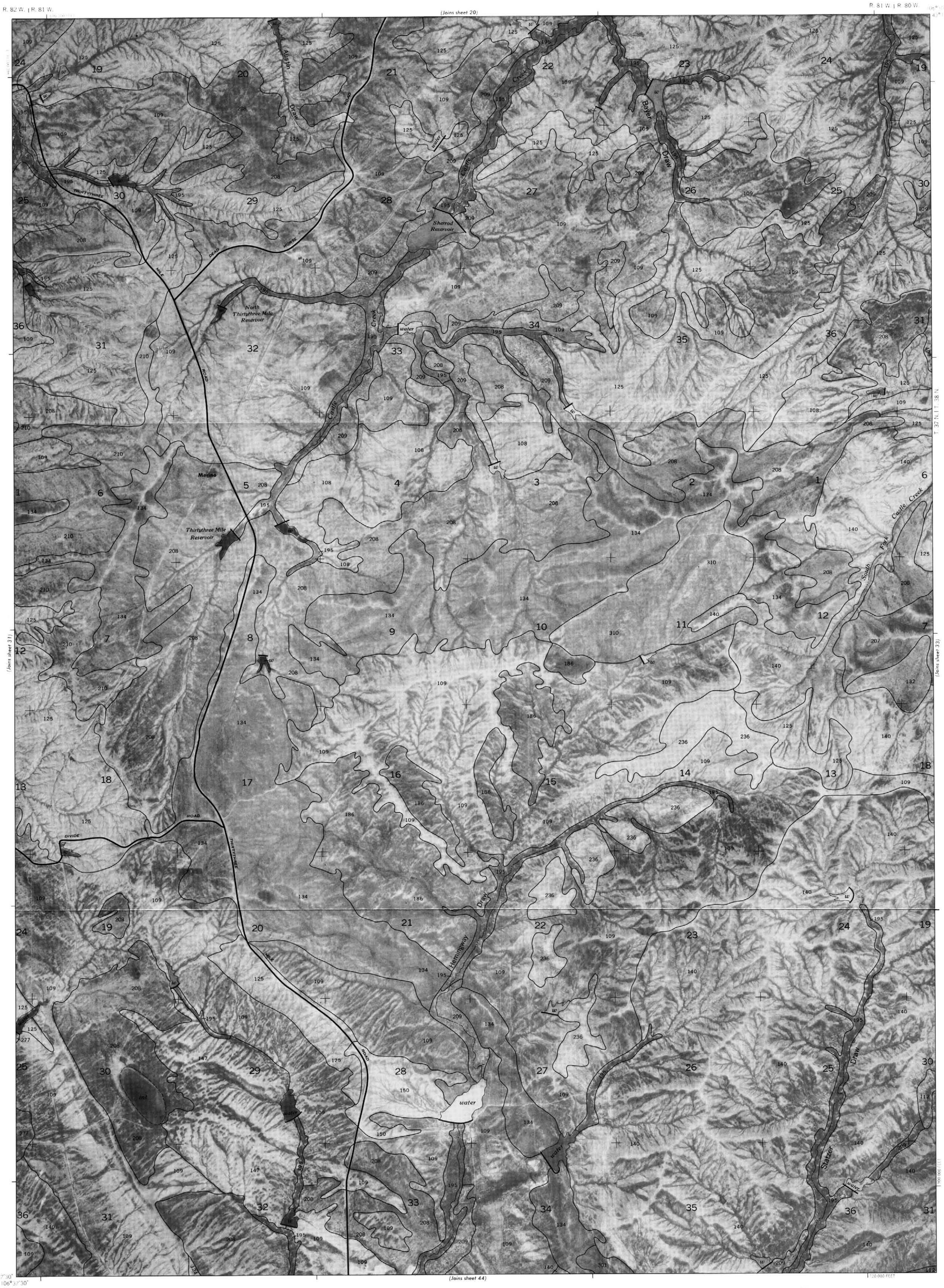
Scale - 1:24 000

NATRONA COUNTY AREA, WYOMING NO. 31

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 32
SOIL SURVEY OF NATRONA COUNTY AREA, WYOMING

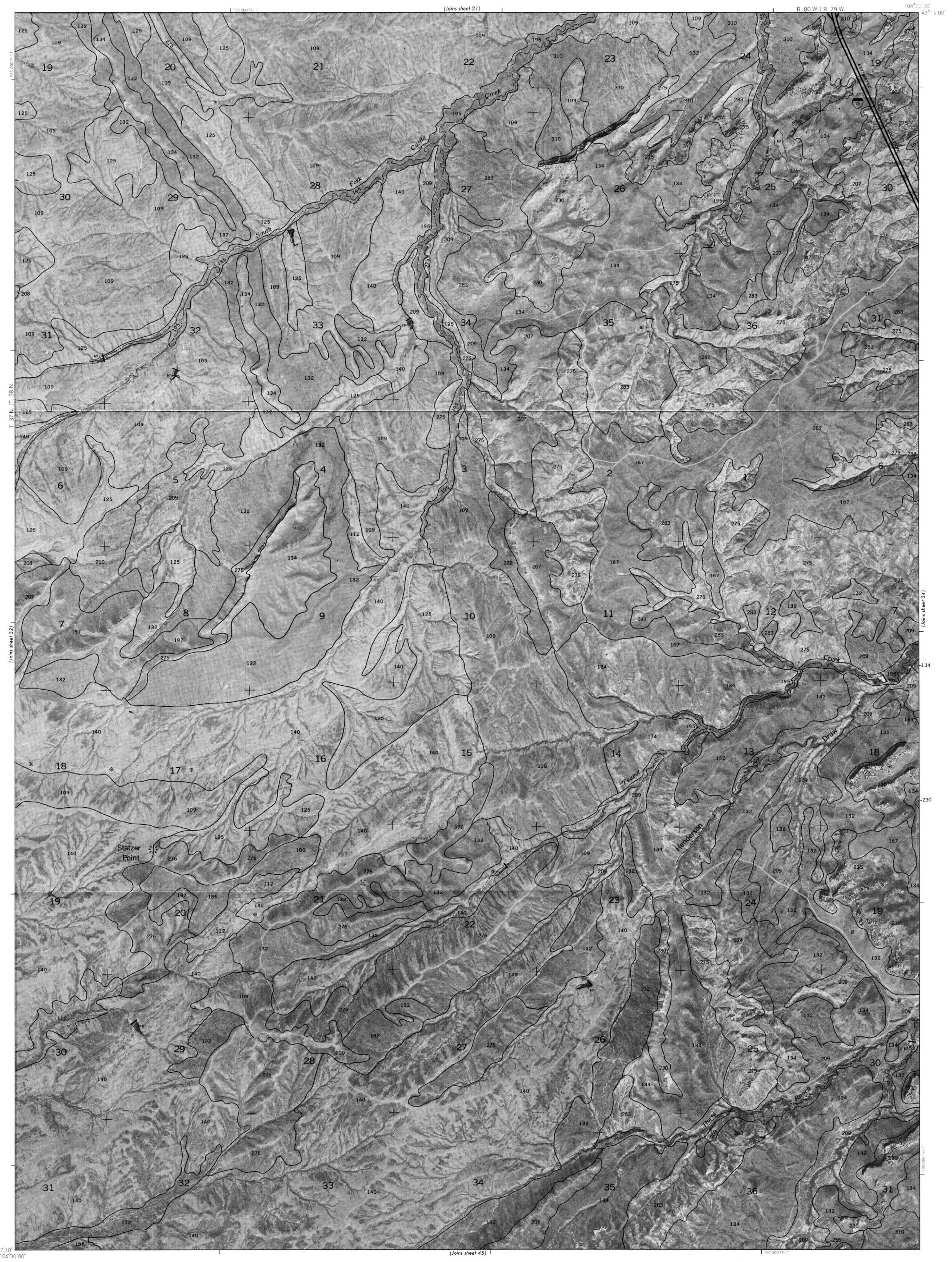


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

NATRONA COUNTY AREA, WYOMING NO. 32



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

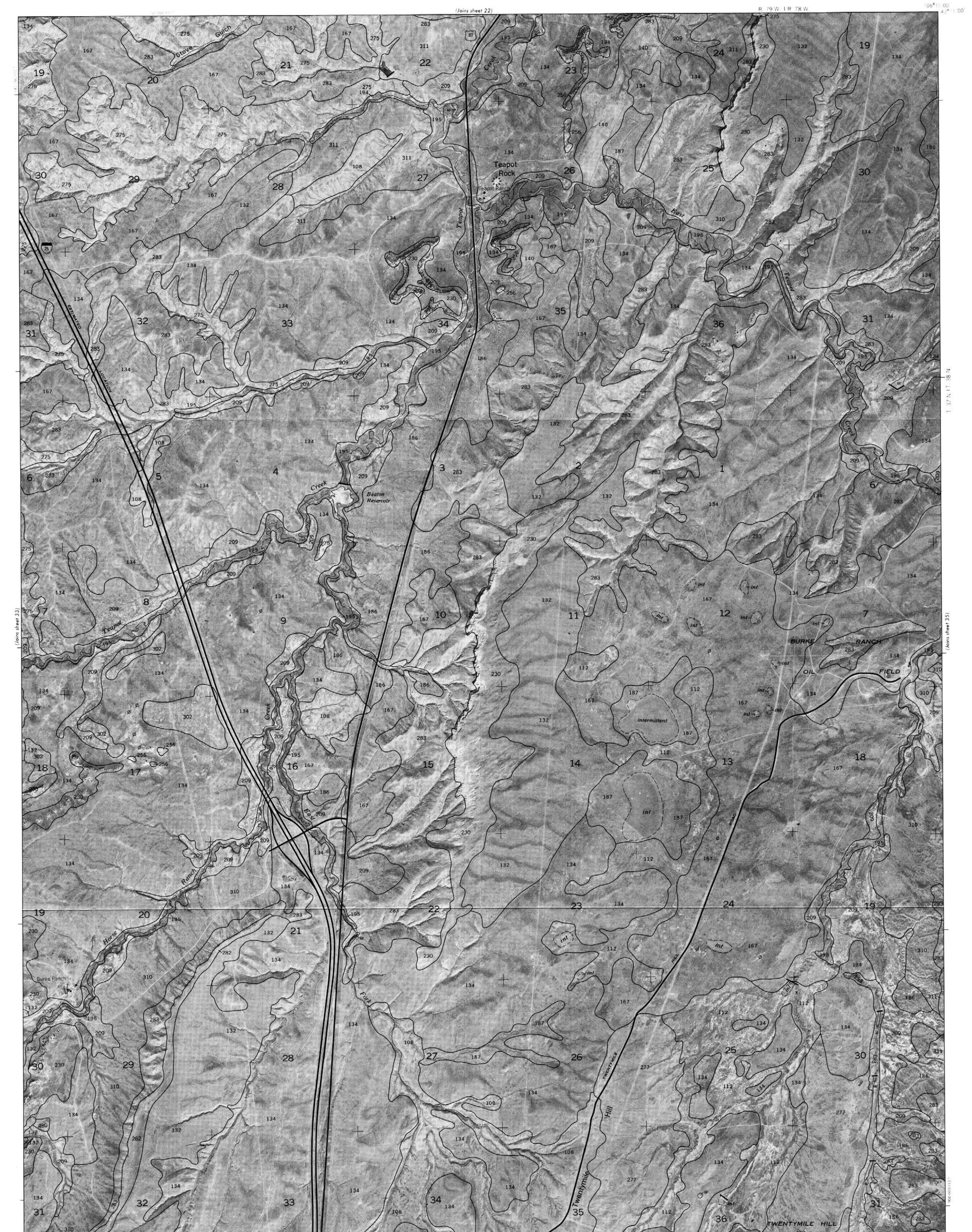
5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

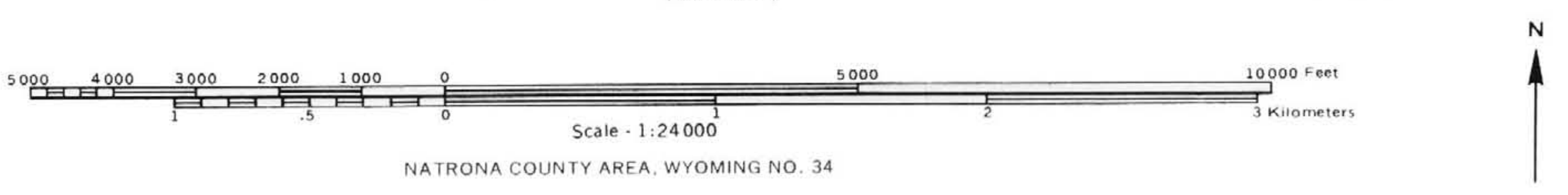
N

NATRONA COUNTY AREA, WYOMING NO. 33

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 34
SOIL SURVEY OF NATRONA COUNTY AREA, WYOMING

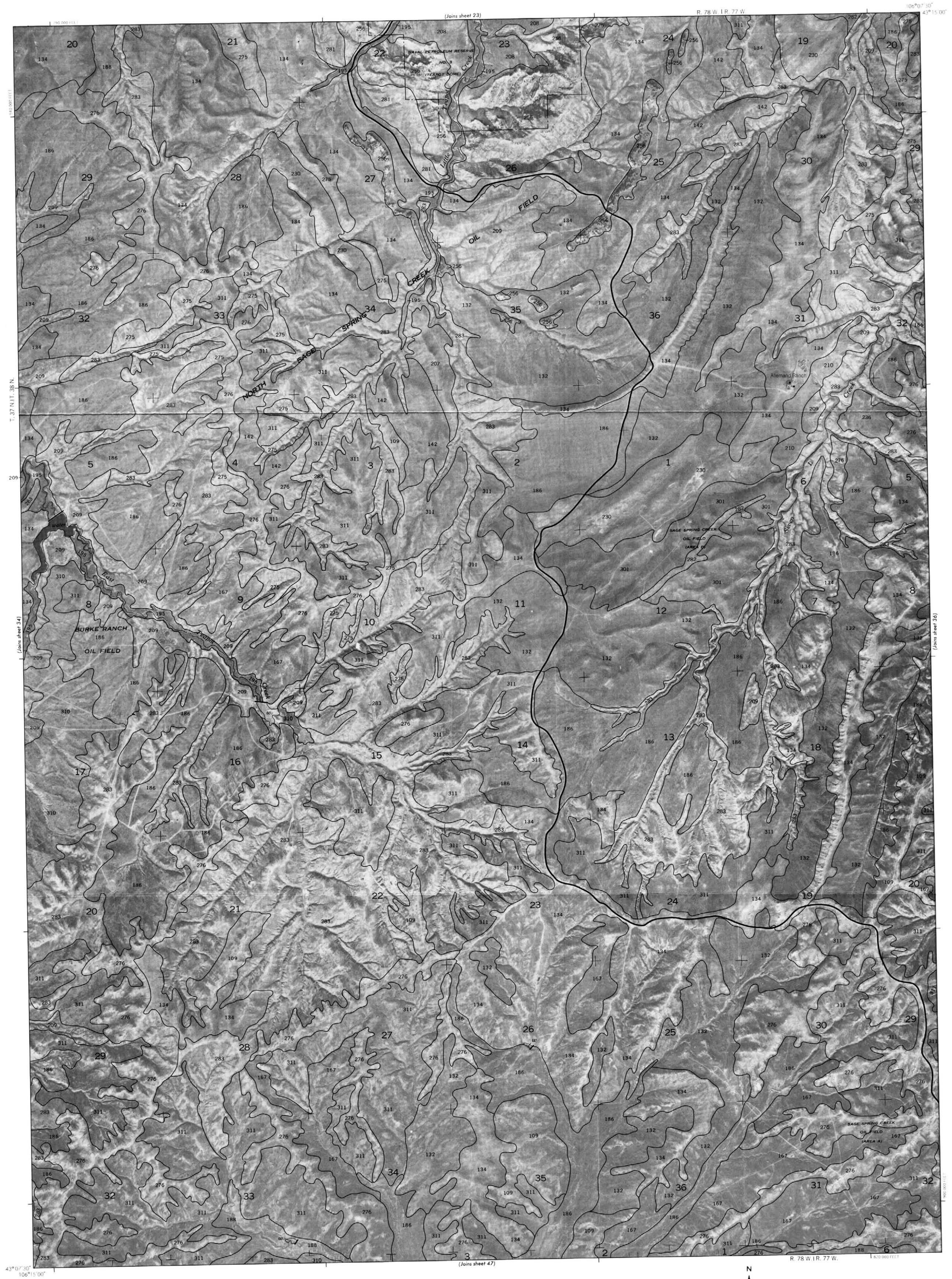




Scale - 1:24000

NATRONA COUNTY AREA, WYOMING NO. 34

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



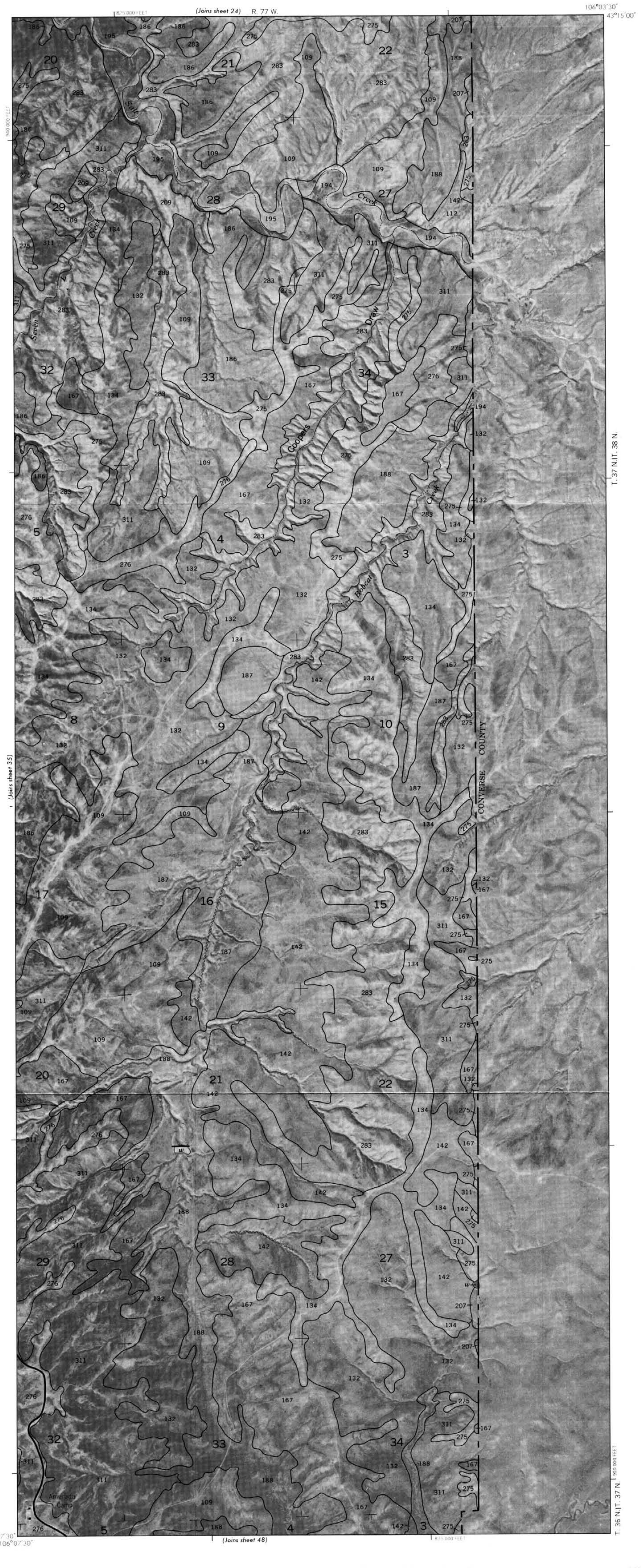
5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet

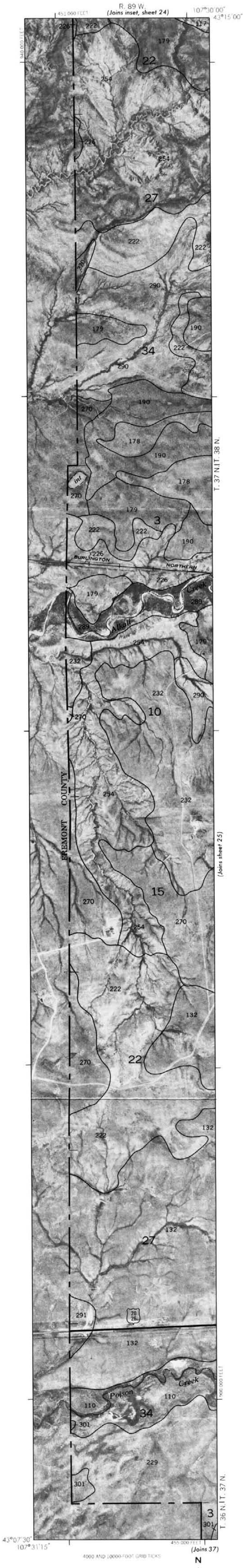
1 .5 0 1 2 3 Kilometers

Scale - 1:24 000

NATRONA COUNTY AREA, WYOMING NO. 35

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.





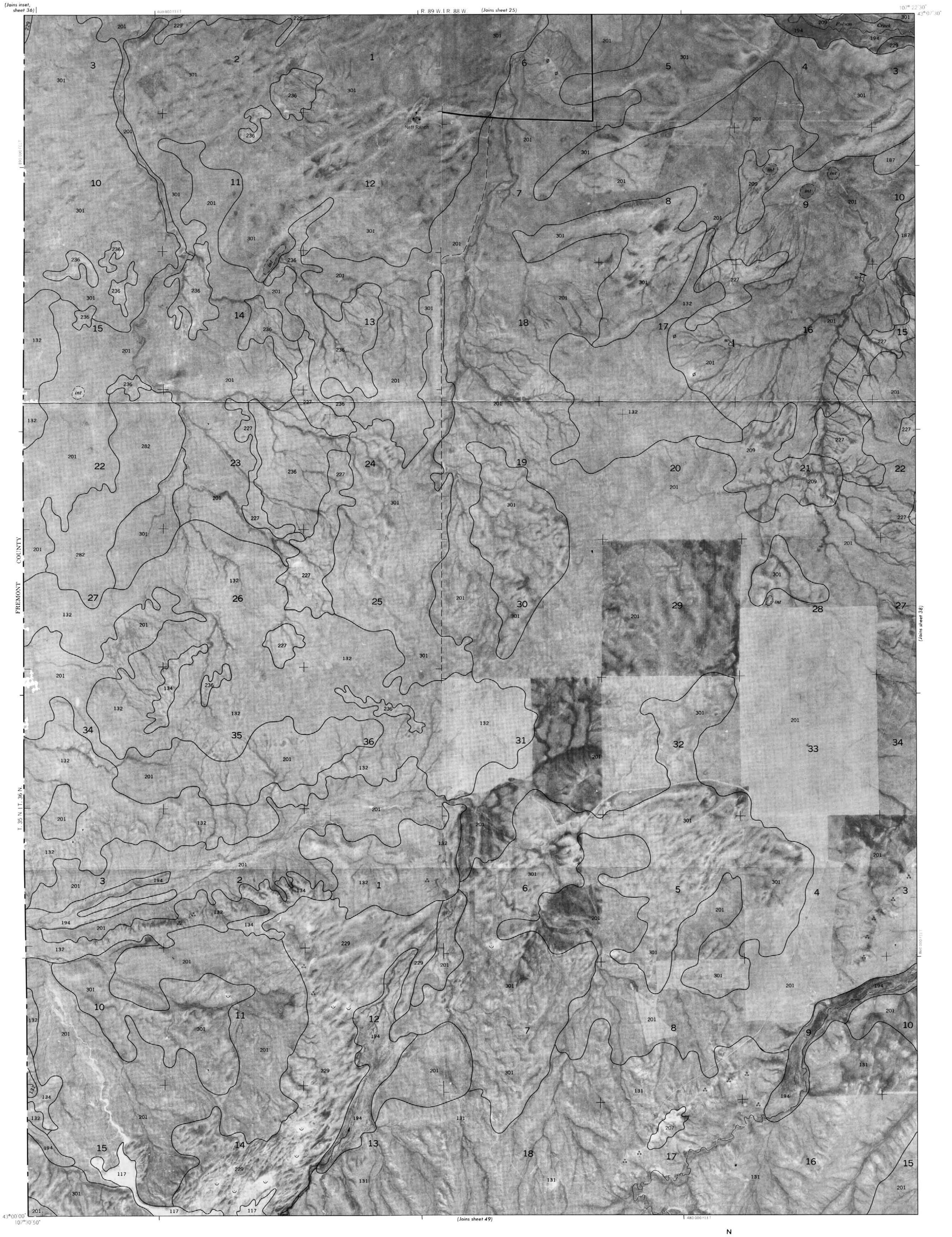
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

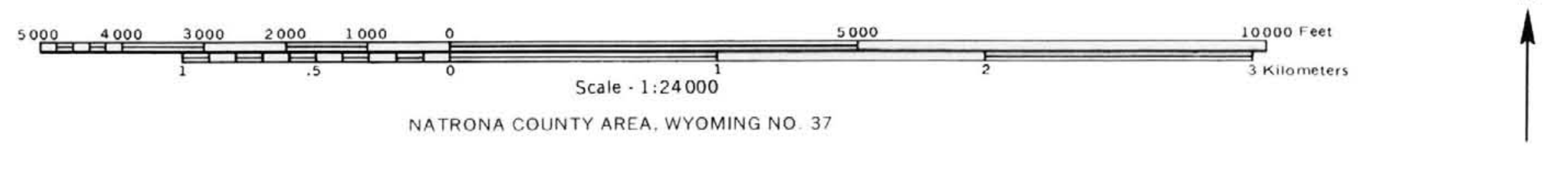
5000 4000 3000 2000 1000 0 5000 10000 Feet

1 .5 0 1 2 3 Kilometers

Scale 1:24 000

NATRONA COUNTY AREA, WYOMING NO. 36

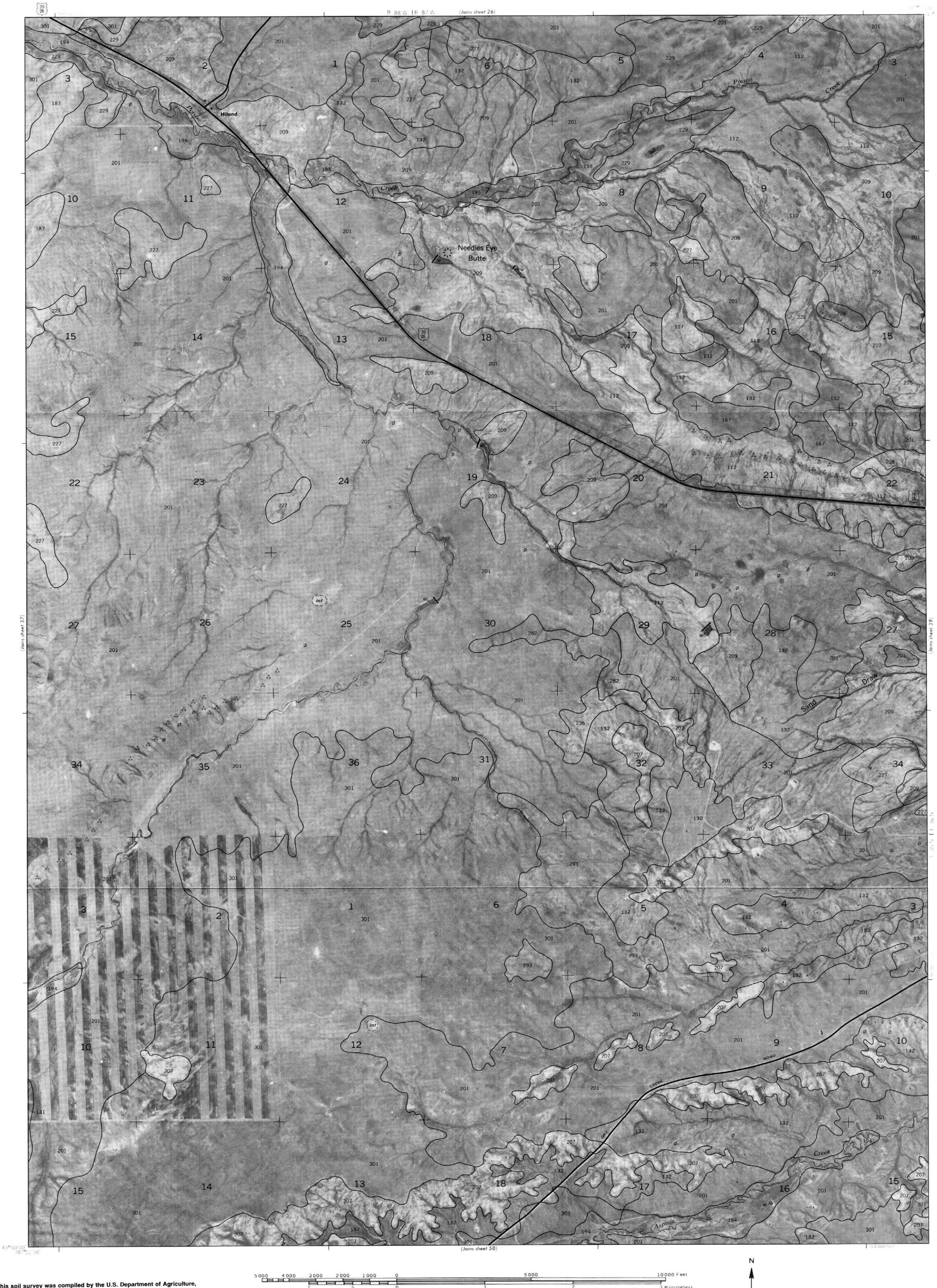




Scale - 1:24000

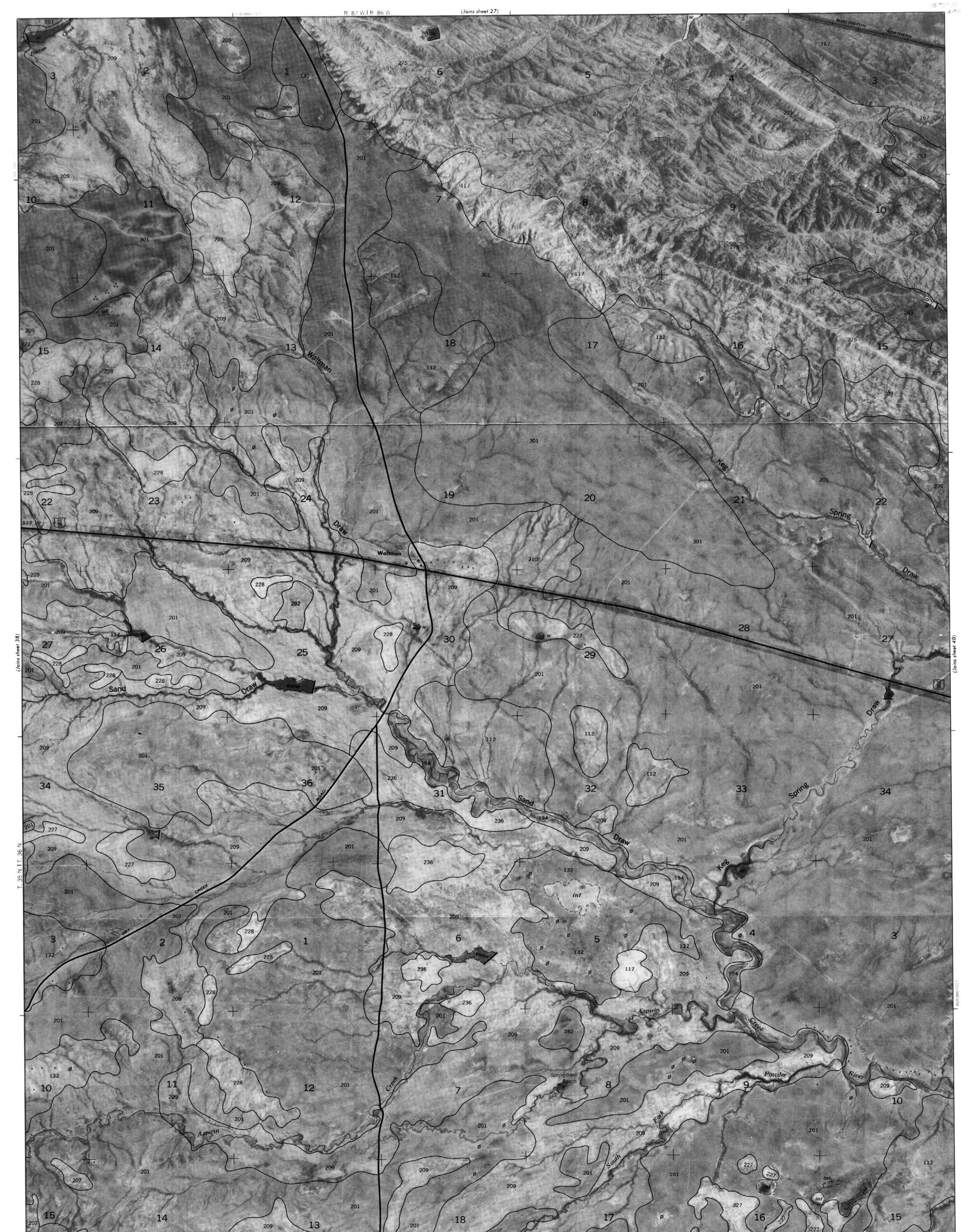
NATRONA COUNTY AREA, WYOMING NO. 37

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 38

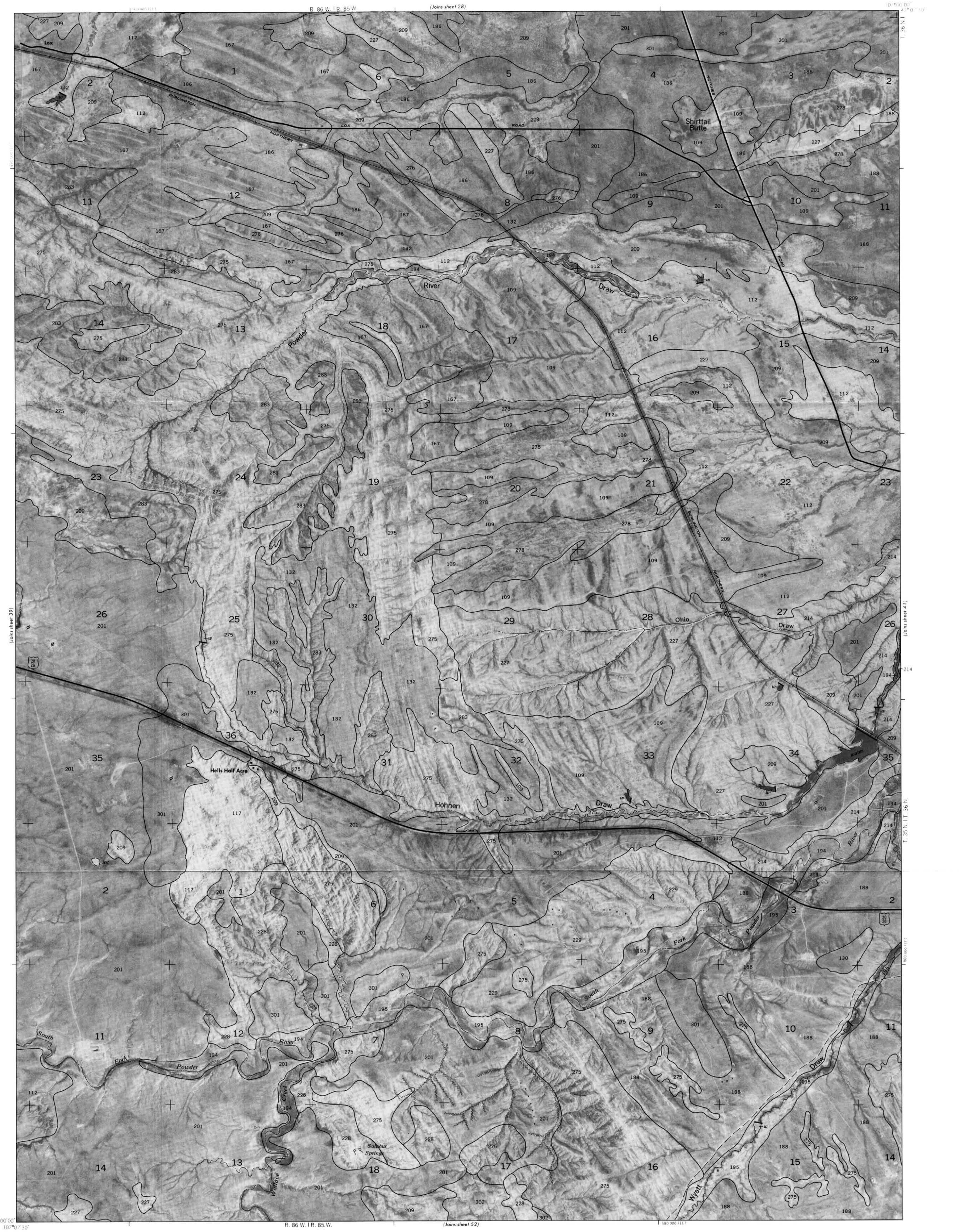


5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

N

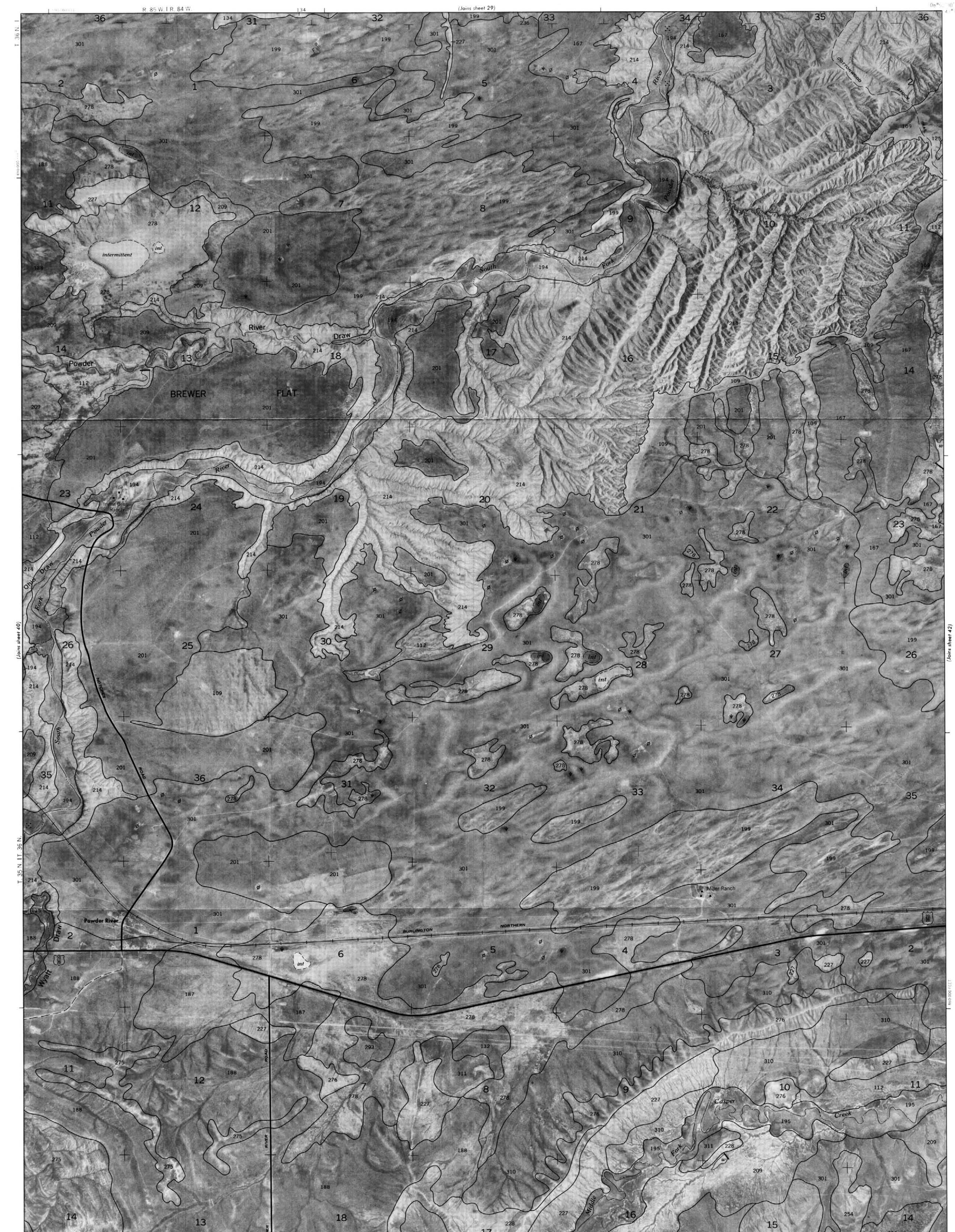
NATRONA COUNTY AREA, WYOMING NO. 39

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



NATRONA COUNTY AREA, WYOMING NO. 40

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

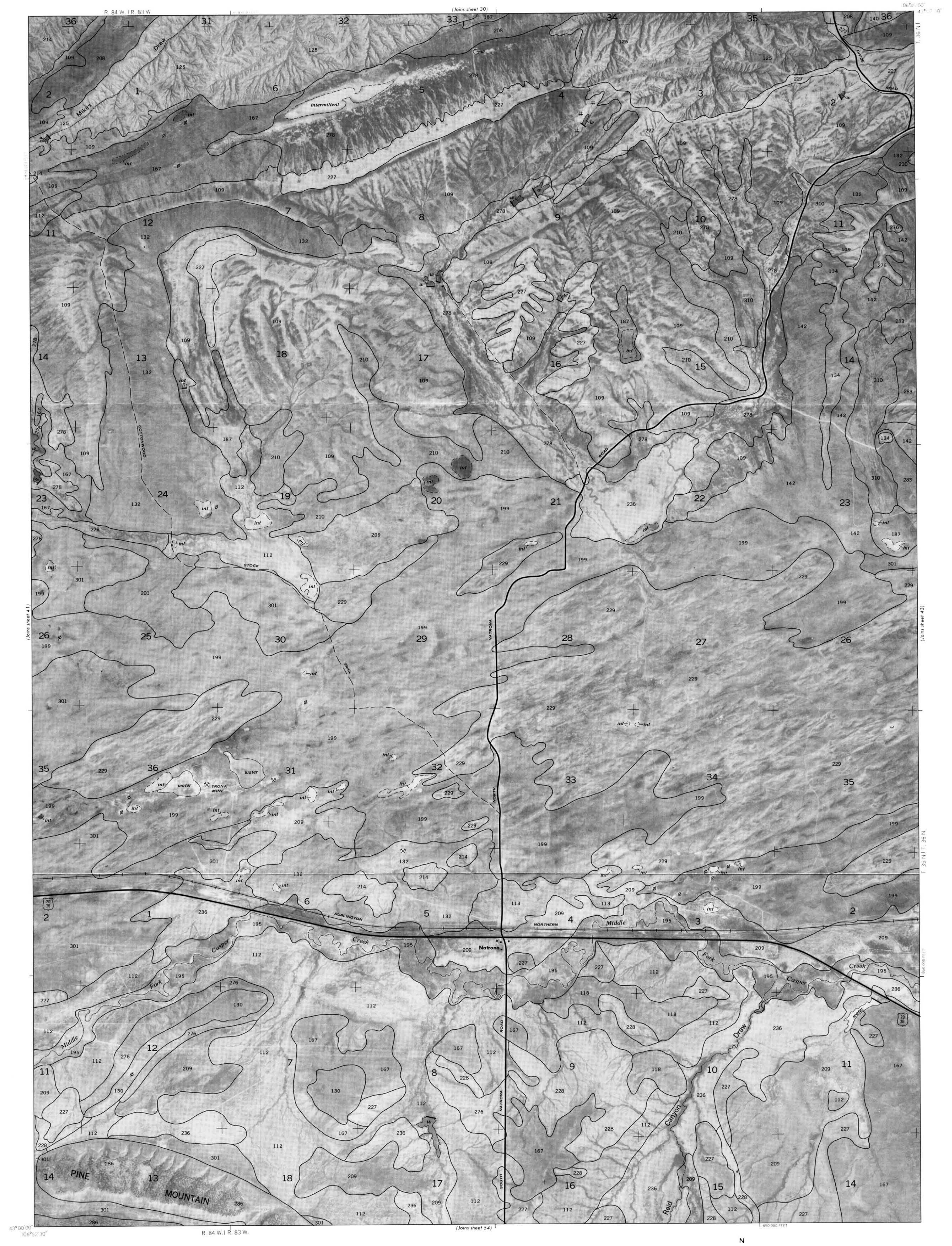


5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

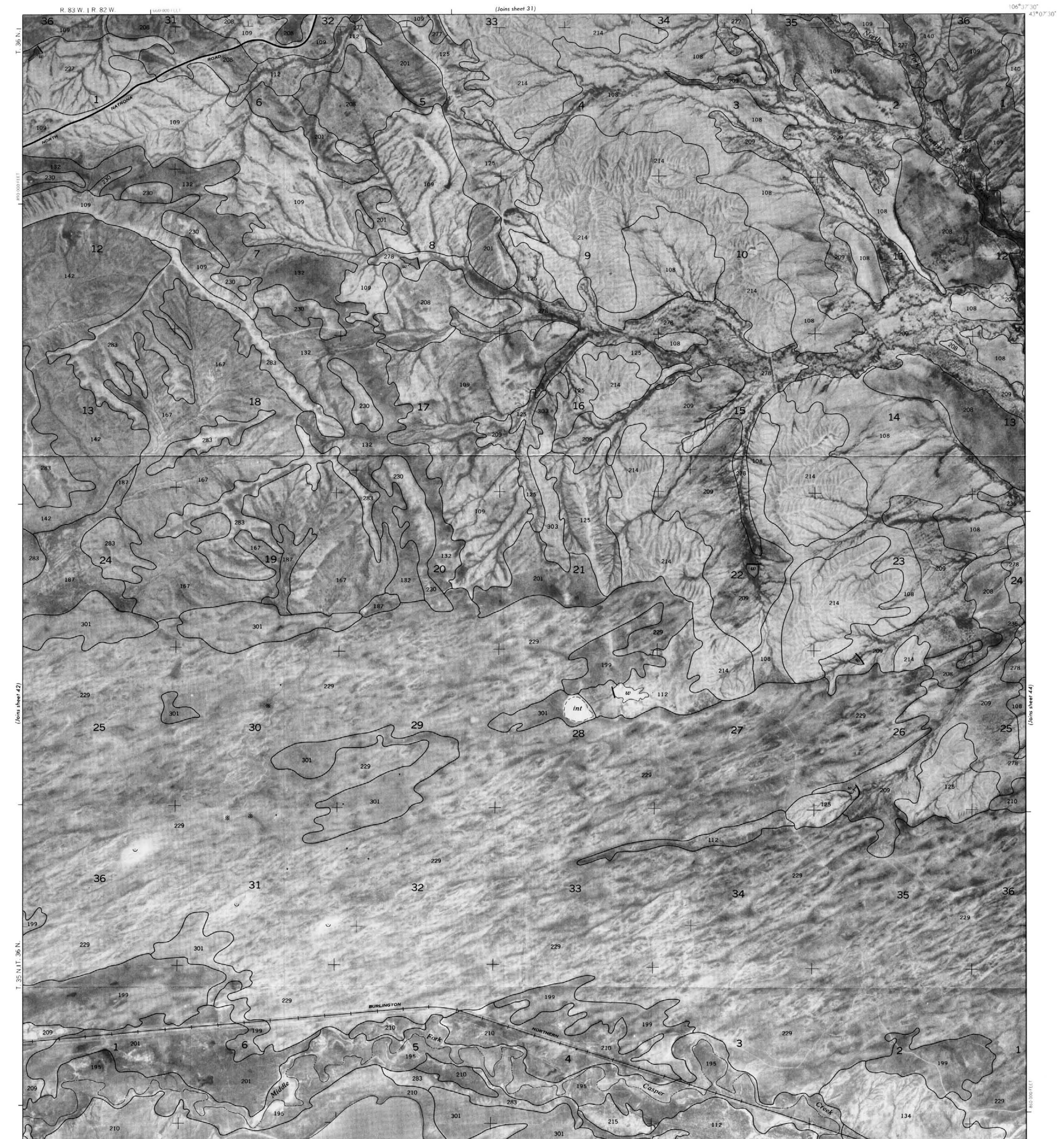
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 41



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

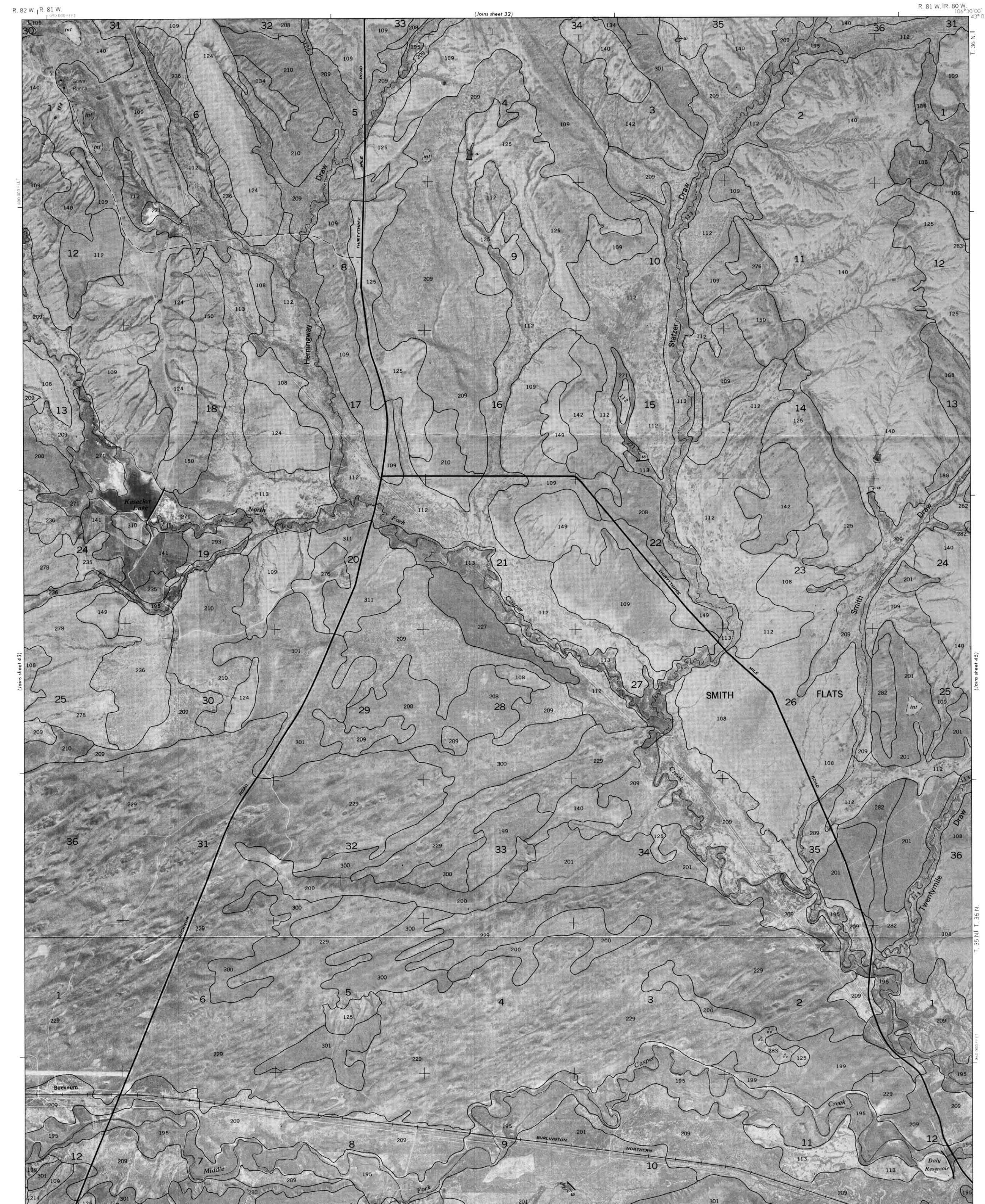
NATRONA COUNTY AREA, WYOMING NO. 42



Scale - 1:24 000

NATRONA COUNTY AREA, WYOMING NO. 43

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

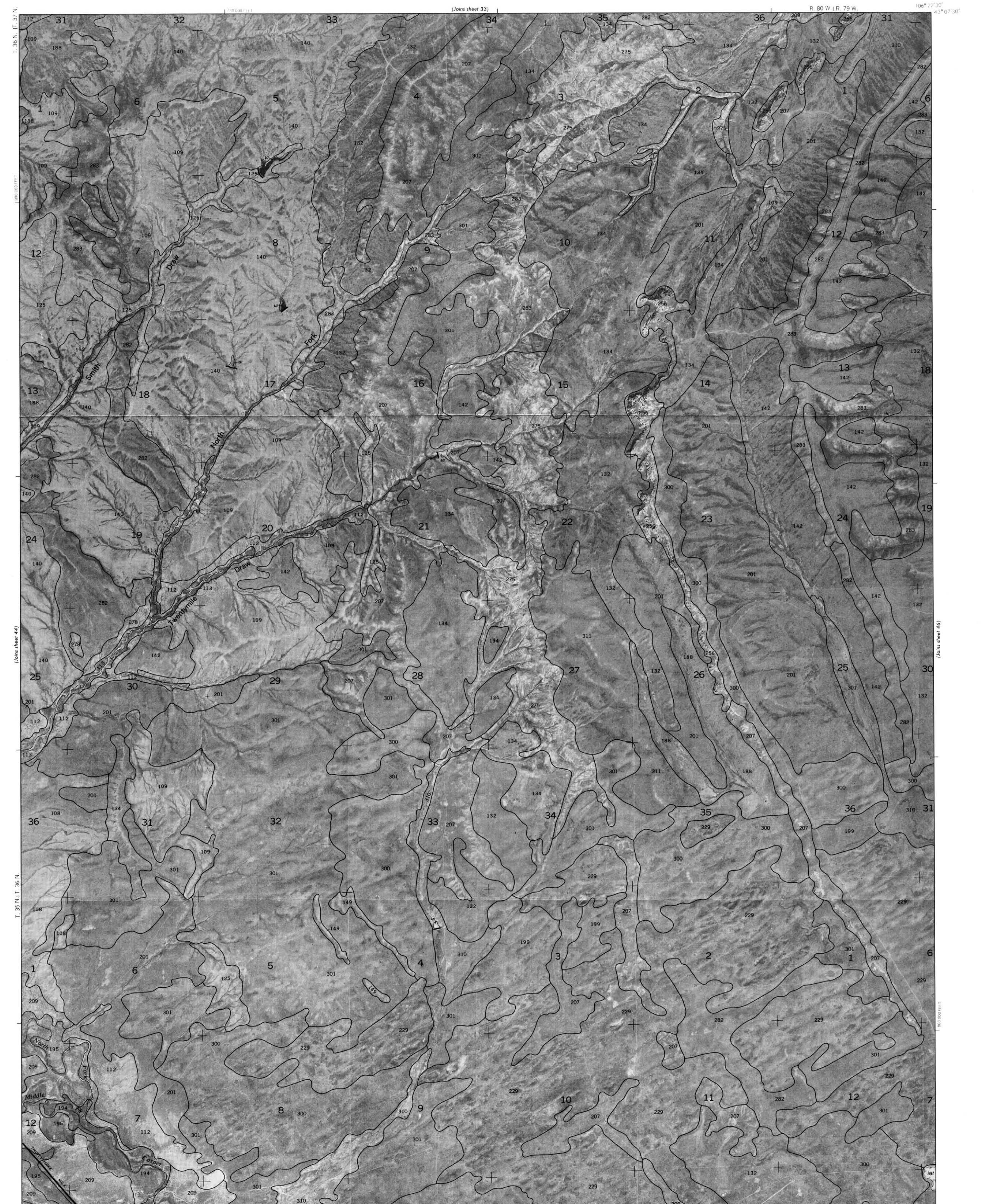


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

NATRONA COUNTY AREA, WYOMING NO. 44



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

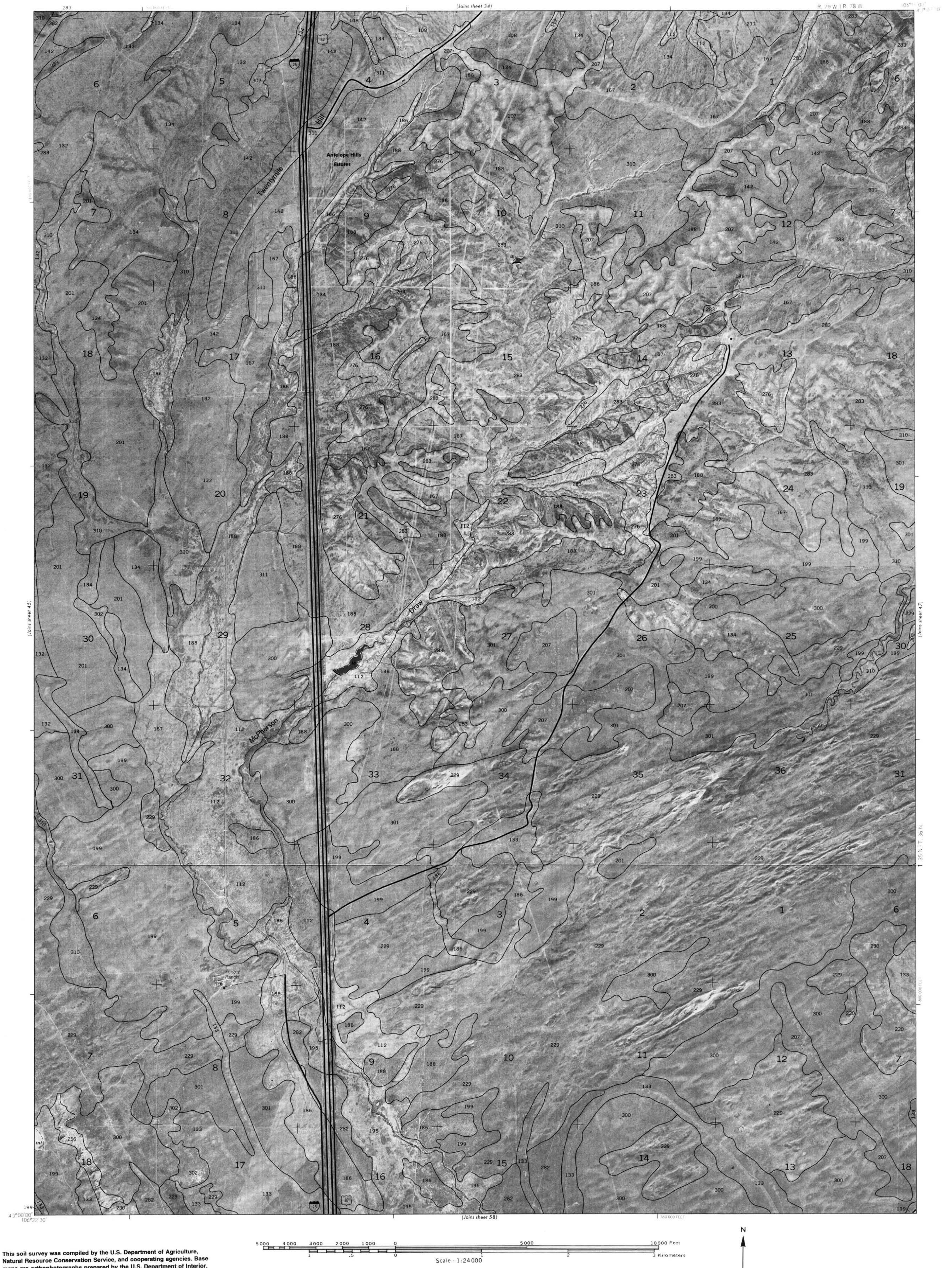
5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

NATRONA COUNTY AREA, WYOMING NO. 45

N

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

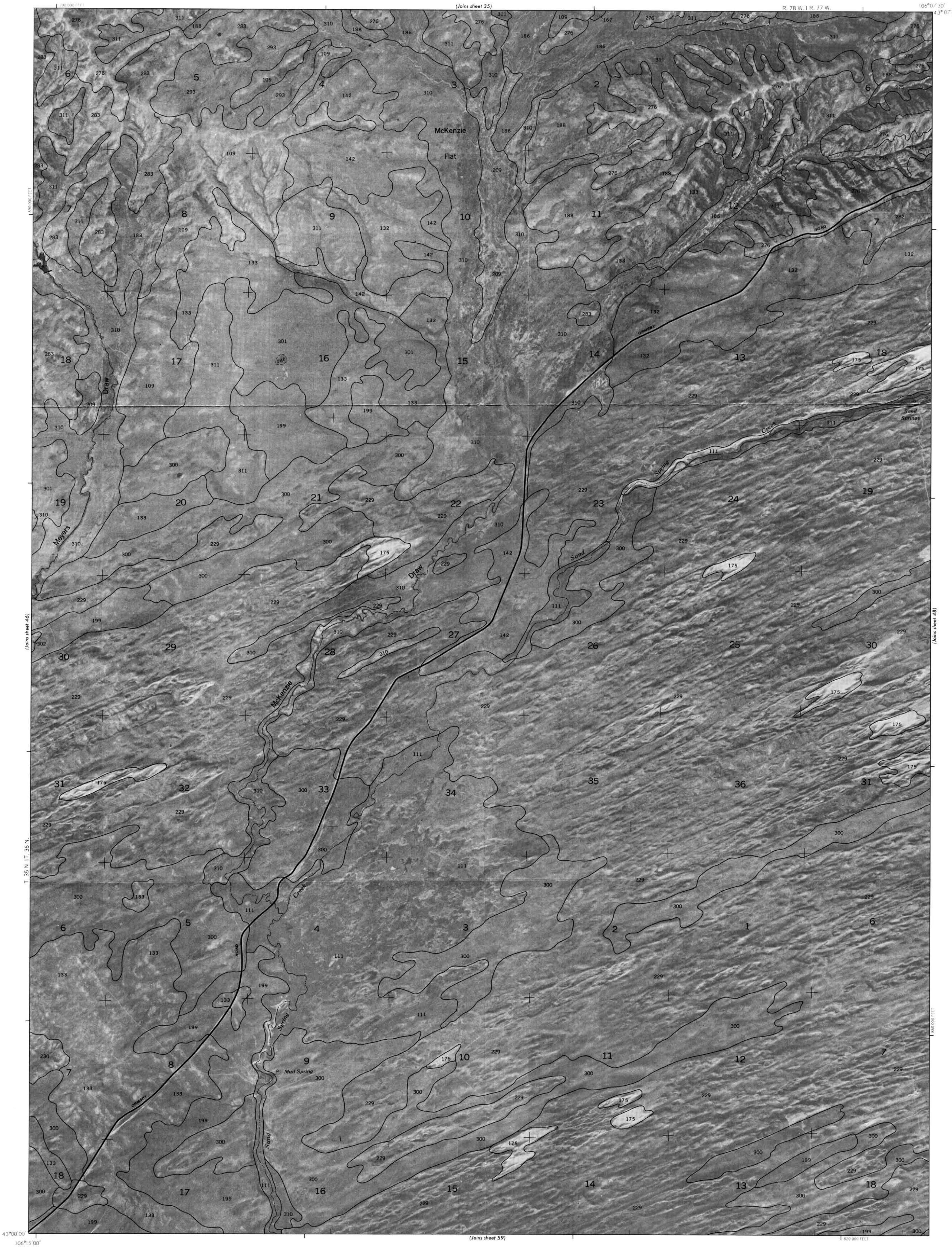
SHEET NO. 46
SOIL SURVEY OF NATRONA COUNTY AREA, WYOMING



Scale - 1:24000

NATRONA COUNTY AREA, WYOMING NO. 46

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

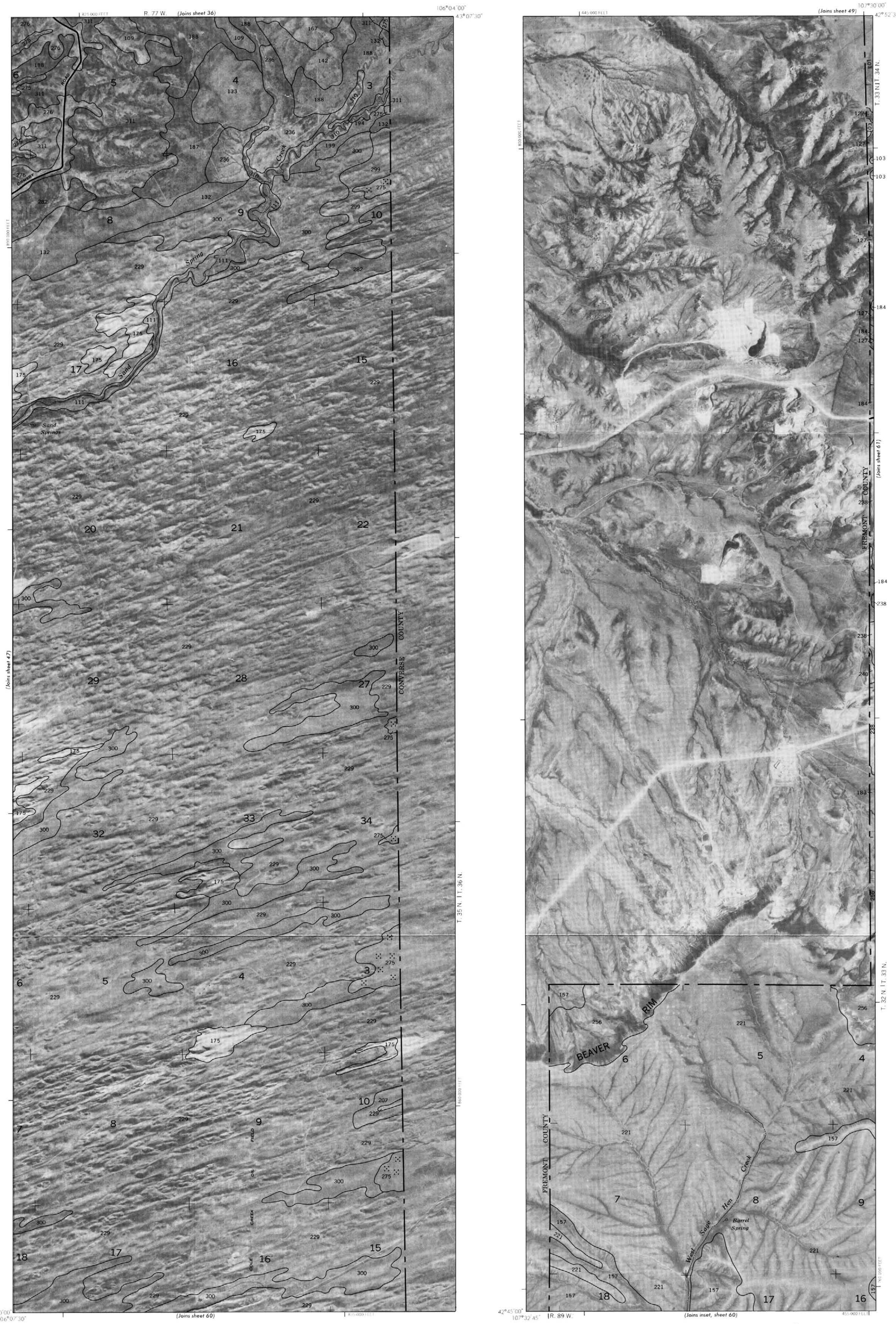
N

NATRONA COUNTY AREA, WYOMING NO. 47

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 48
SOIL SURVEY OF NATRONA COUNTY AREA, WYOMING



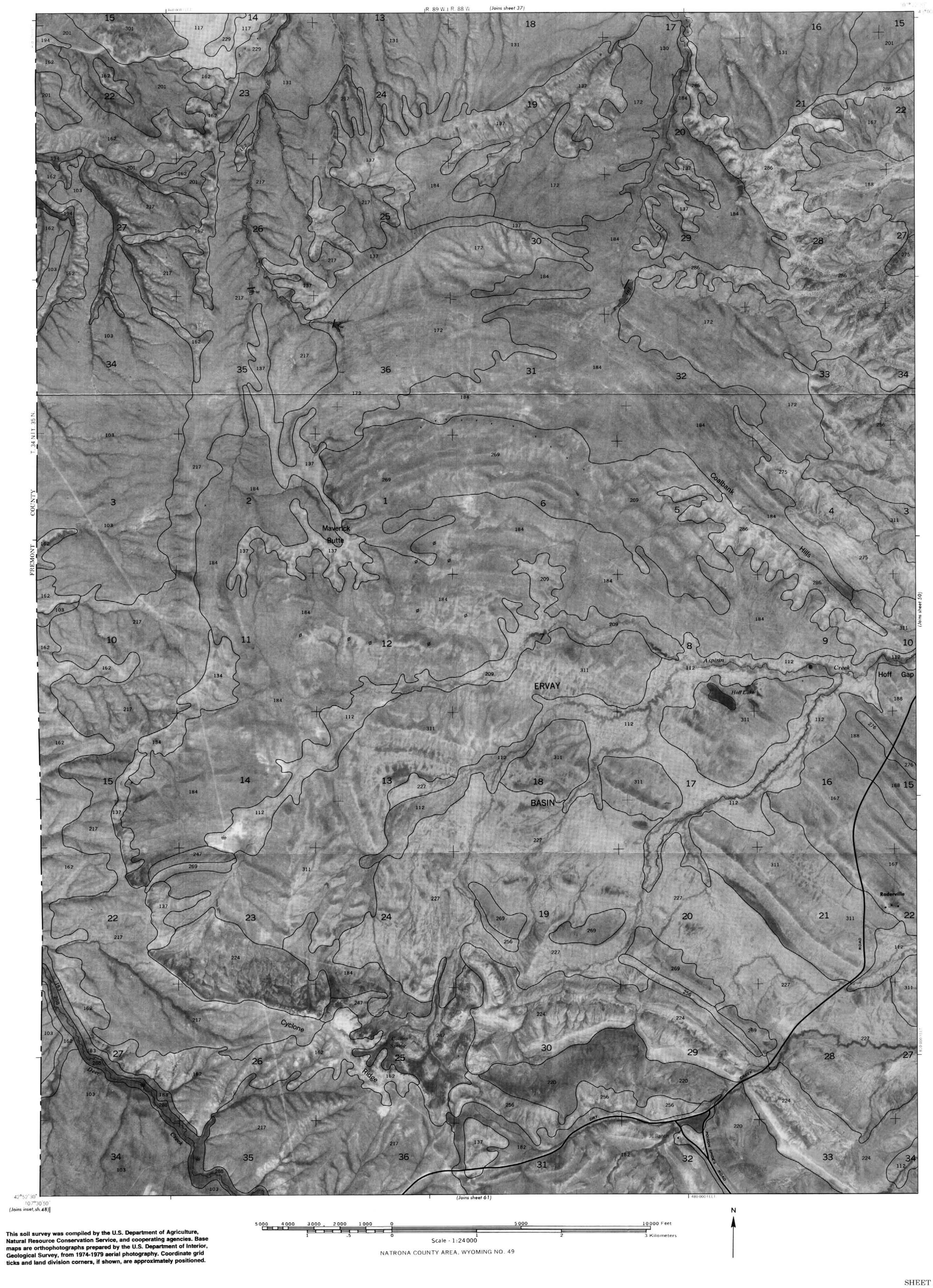
5000 4000 3000 2000 1000 0 5000 10000 Feet

1 .5 0 1 2 3 Kilometers

Scale - 1:24 000

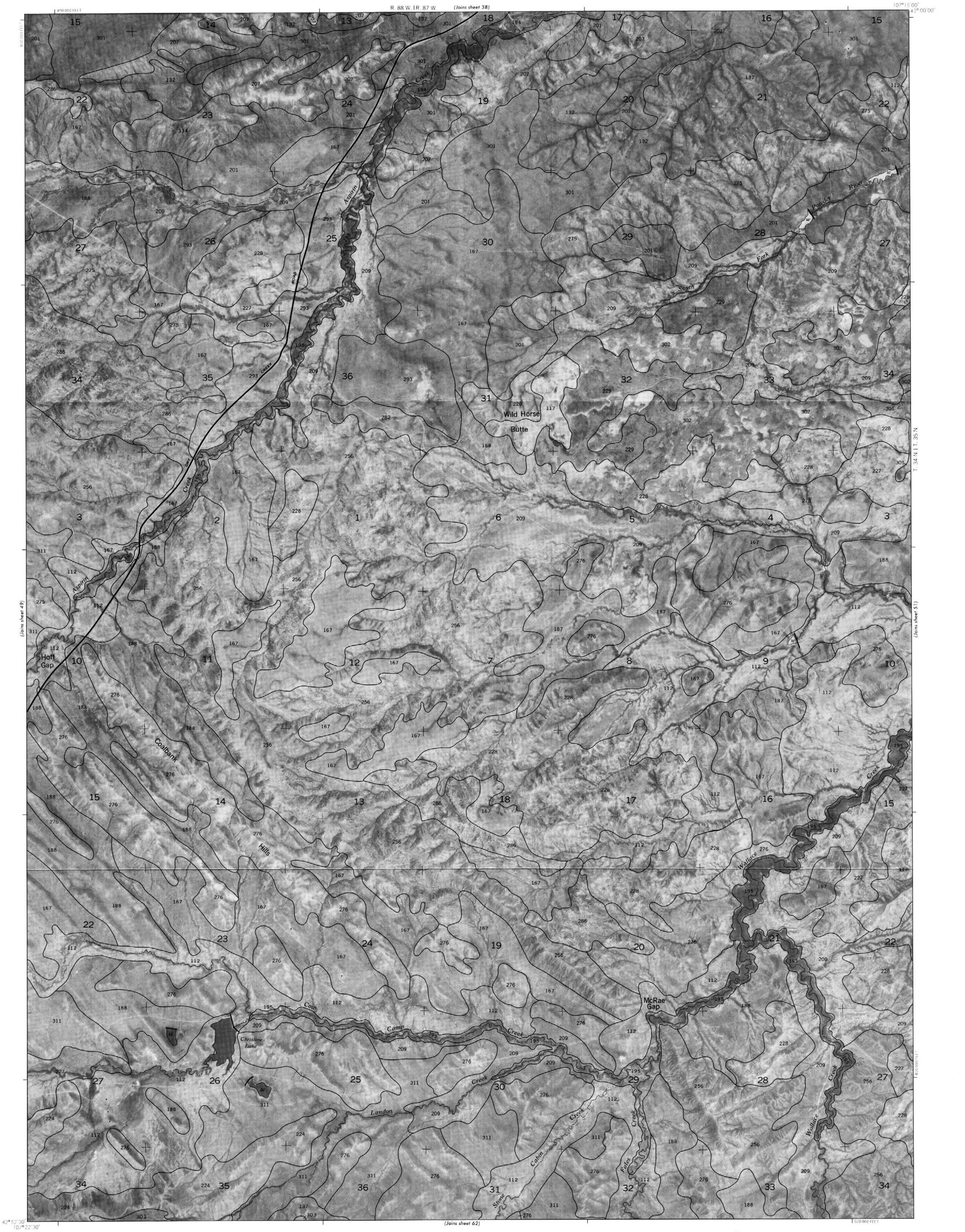
NATRONA COUNTY AREA, WYOMING NO. 48

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 49



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

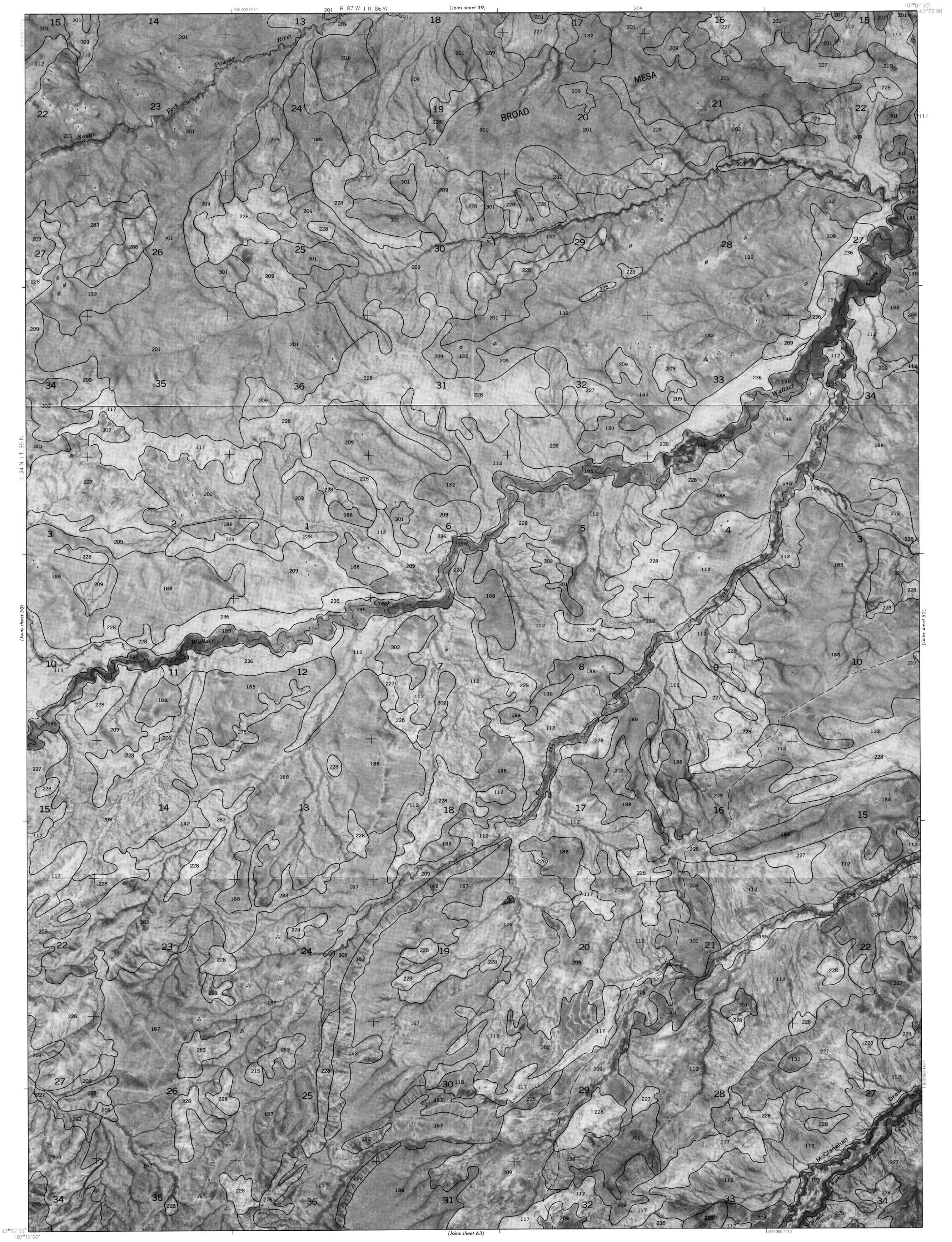
5000 4000 3000 2000 1000 0 5000 10000 Feet

1 .5 0 1 2 3 Kilometers

Scale - 1:24000

N

NATRONA COUNTY AREA, WYOMING NO. 50



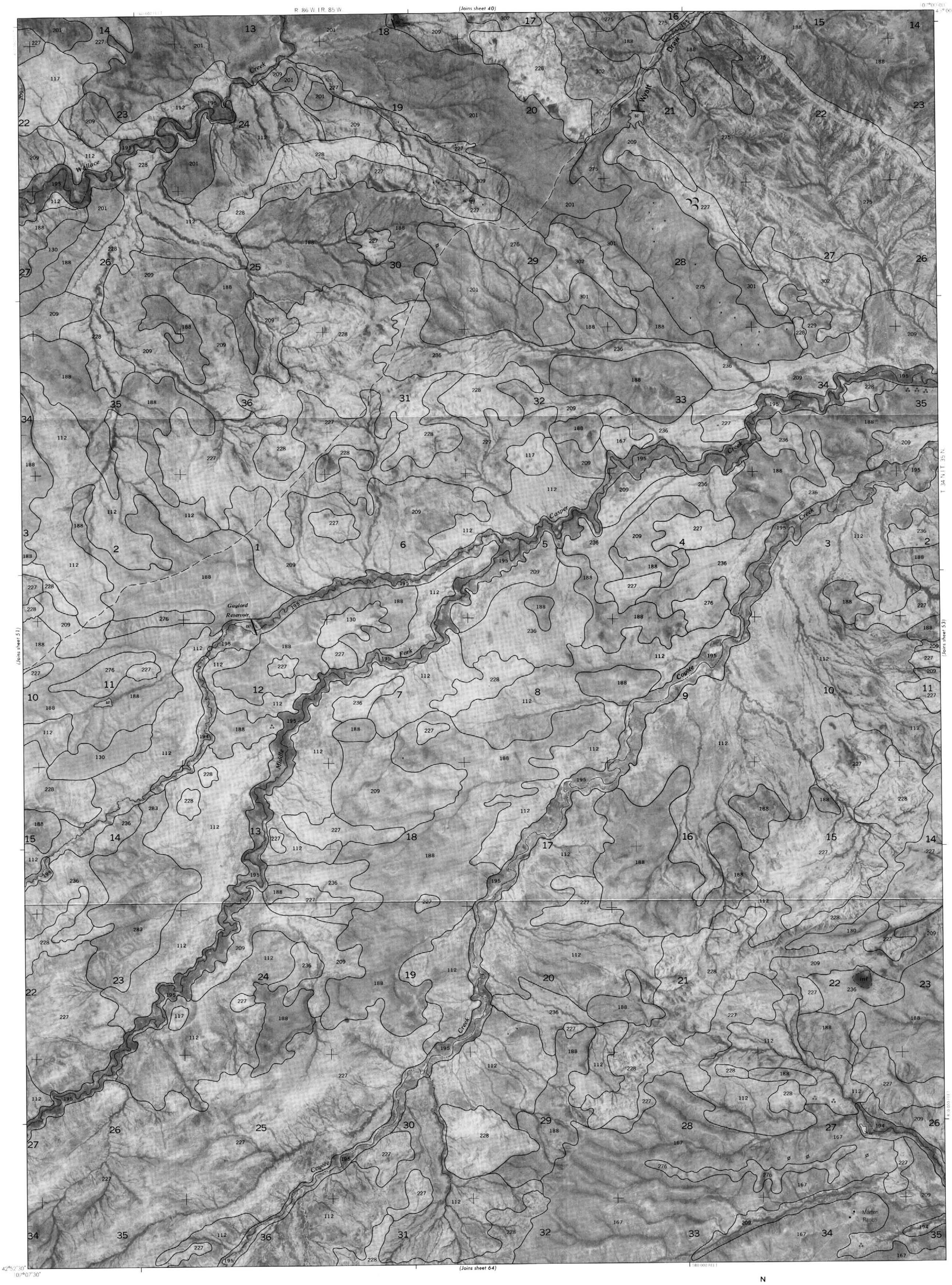
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

NATRONA COUNTY AREA, WYOMING NO. 51

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

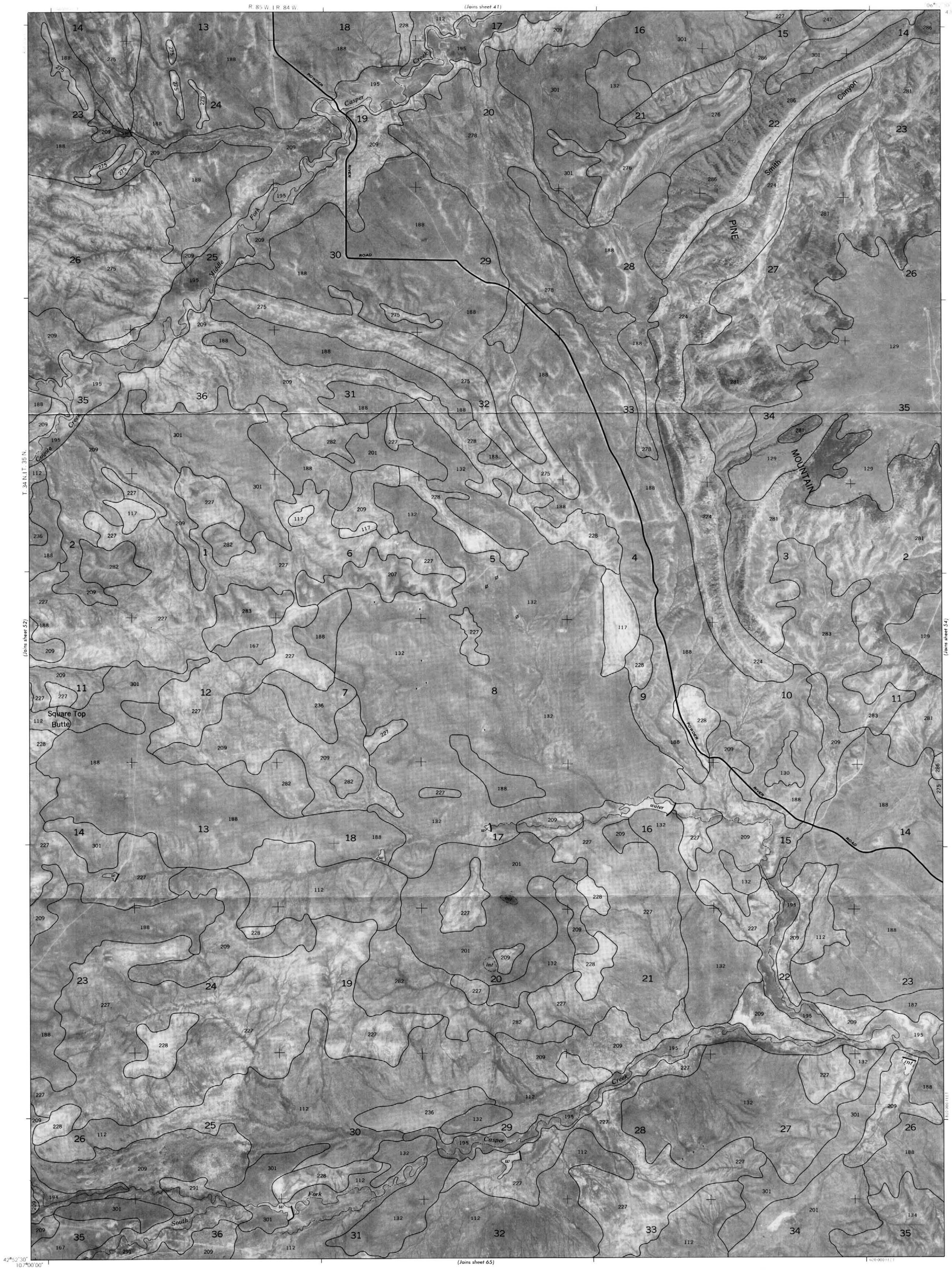


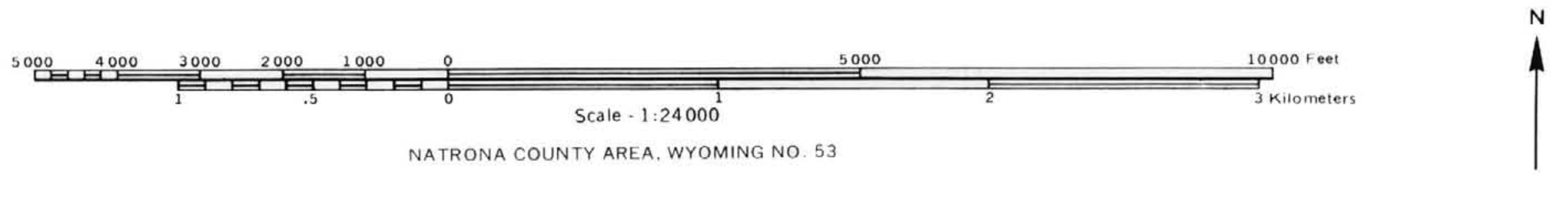
5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

N

NATRONA COUNTY AREA, WYOMING NO. 52

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.





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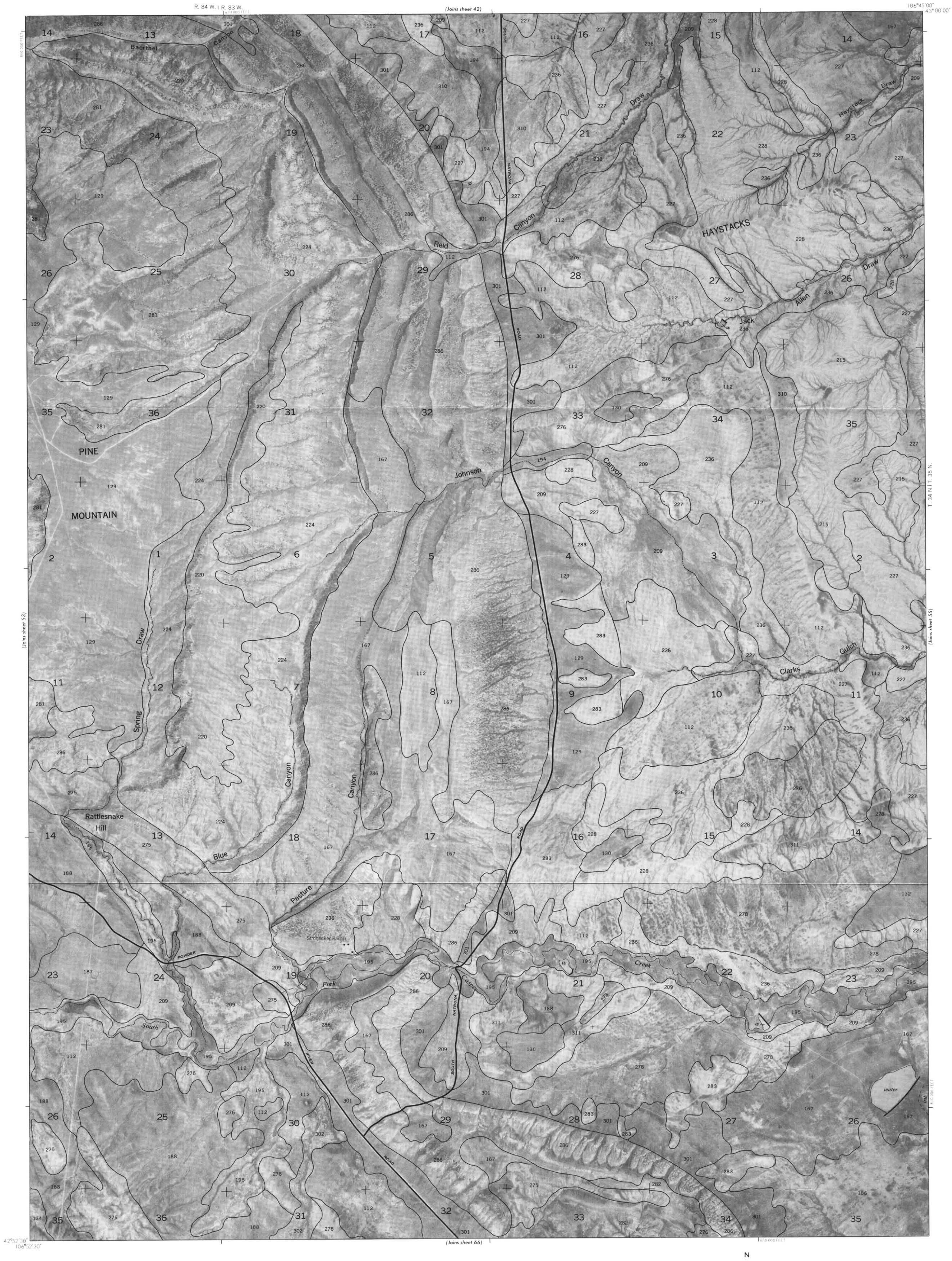
NATRONA COUNTY AREA, WYOMING NO. 53



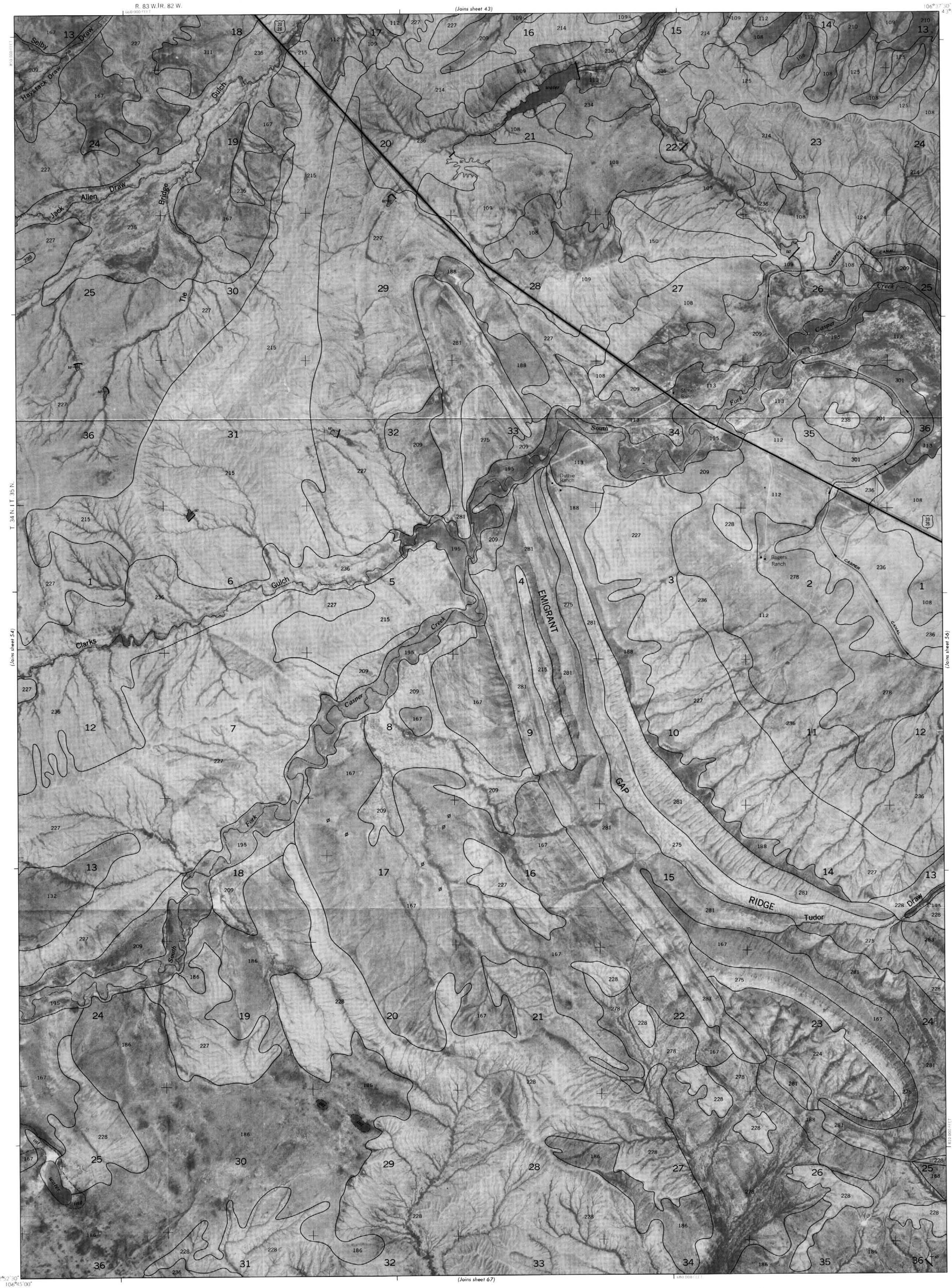
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 55
SOIL SURVEY OF NATRONA COUNTY AREA, WYOMING



5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

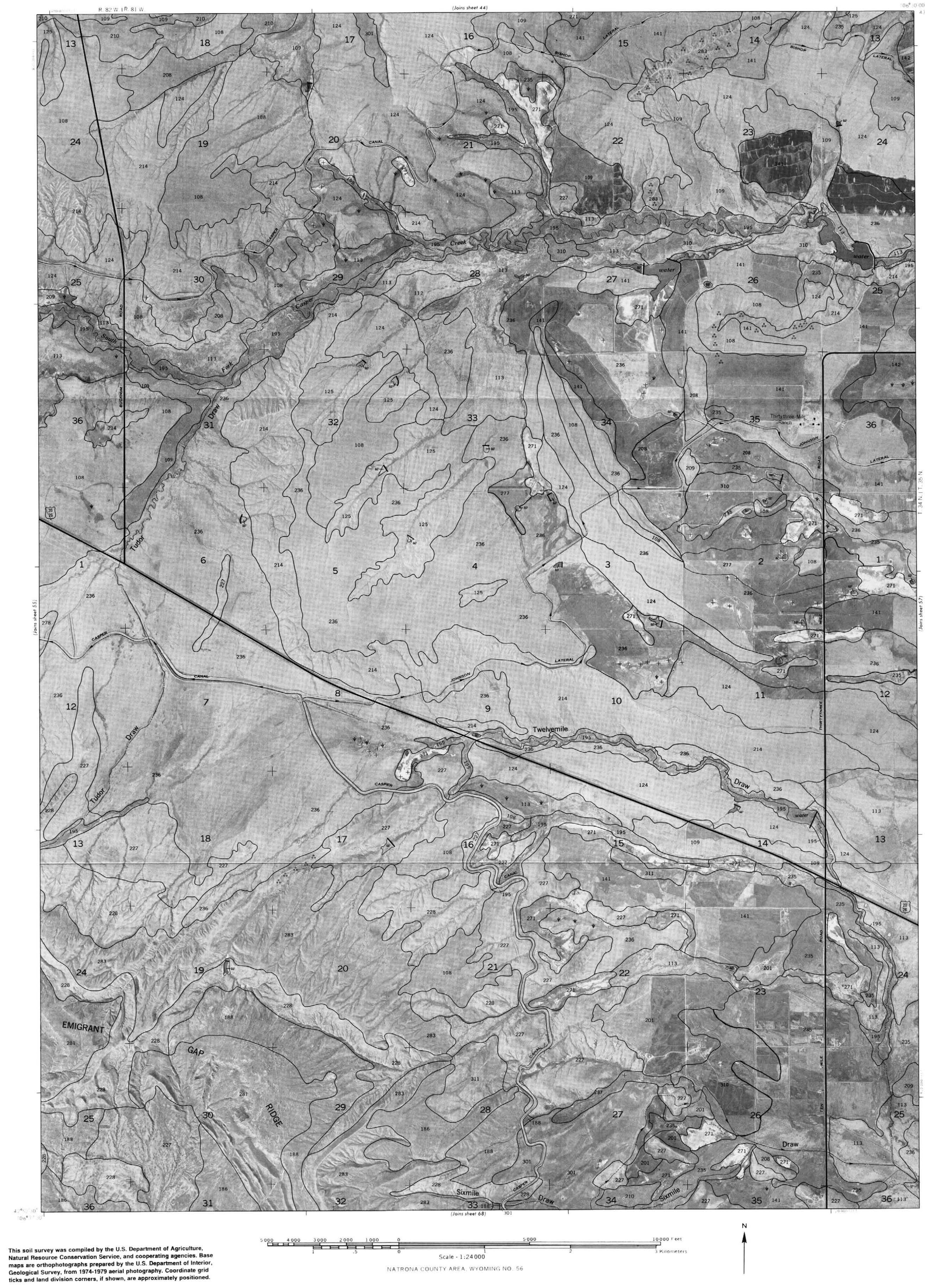
NATRONA COUNTY AREA, WYOMING NO. 55

N

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 56
SOIL SURVEY OF NATRONA COUNTY AREA, WYOMING

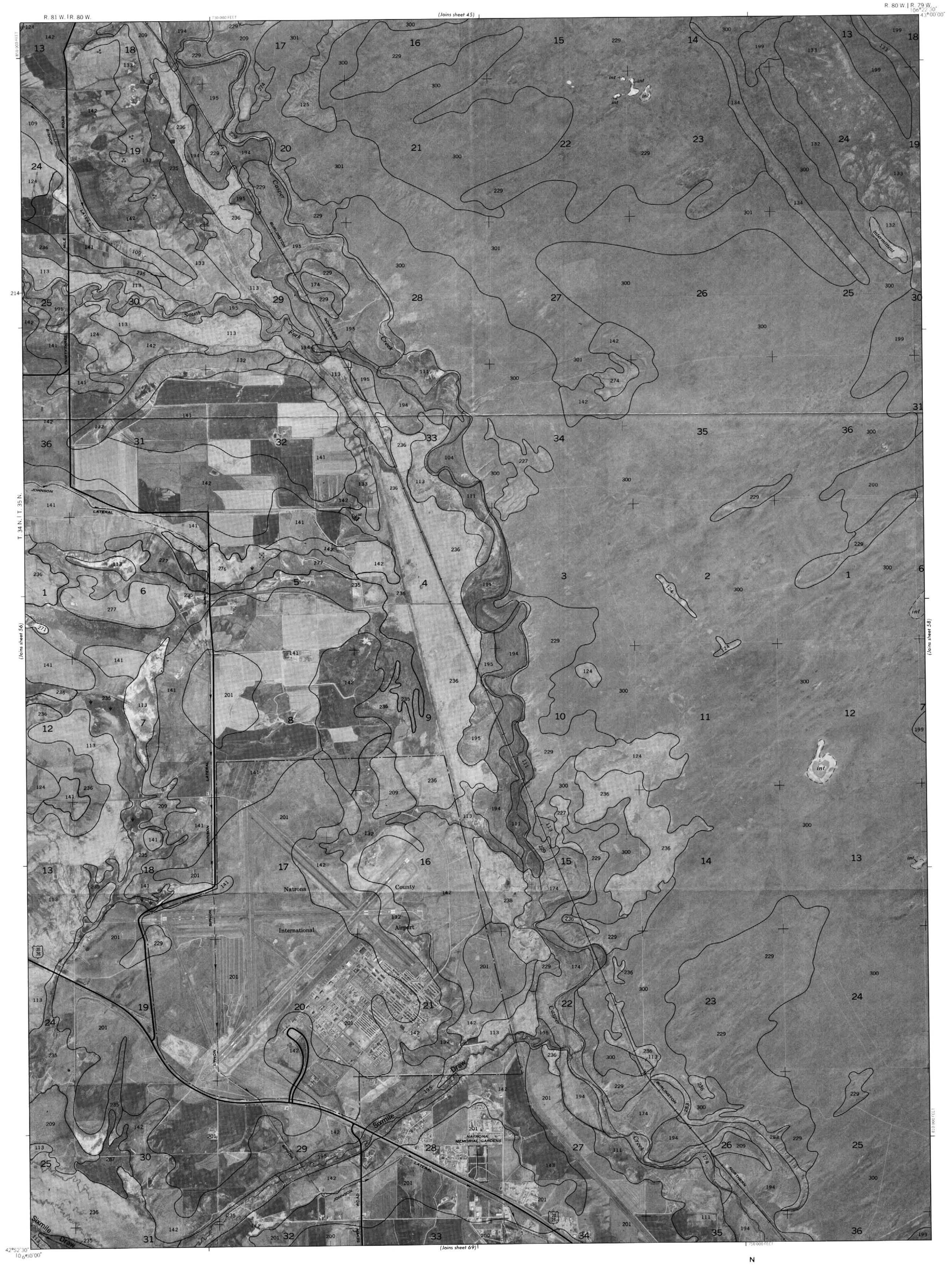


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 56

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 57
SOIL SURVEY OF NATRONA COUNTY AREA, WYOMING

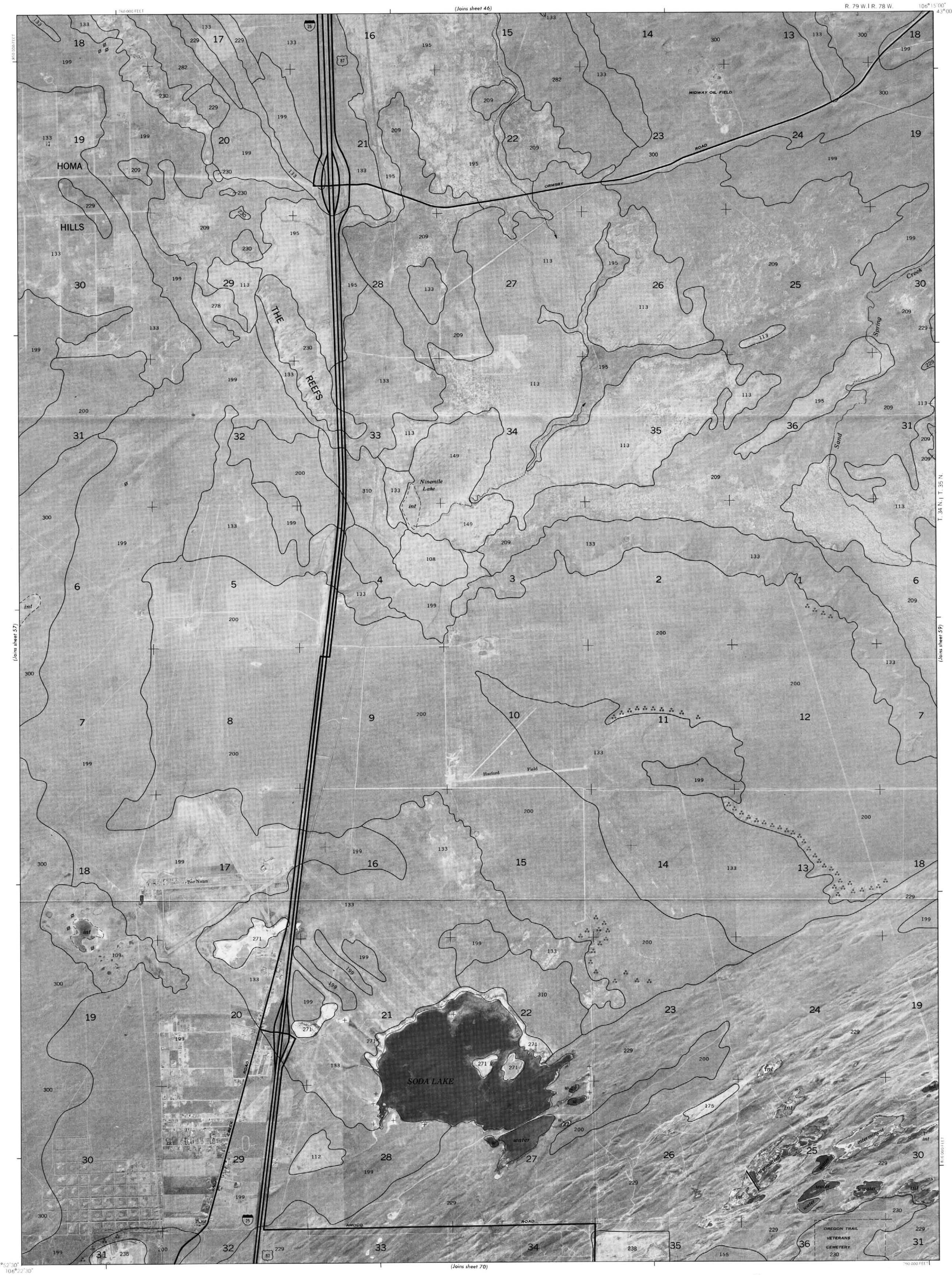


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

NATRONA COUNTY AREA, WYOMING NO. 57

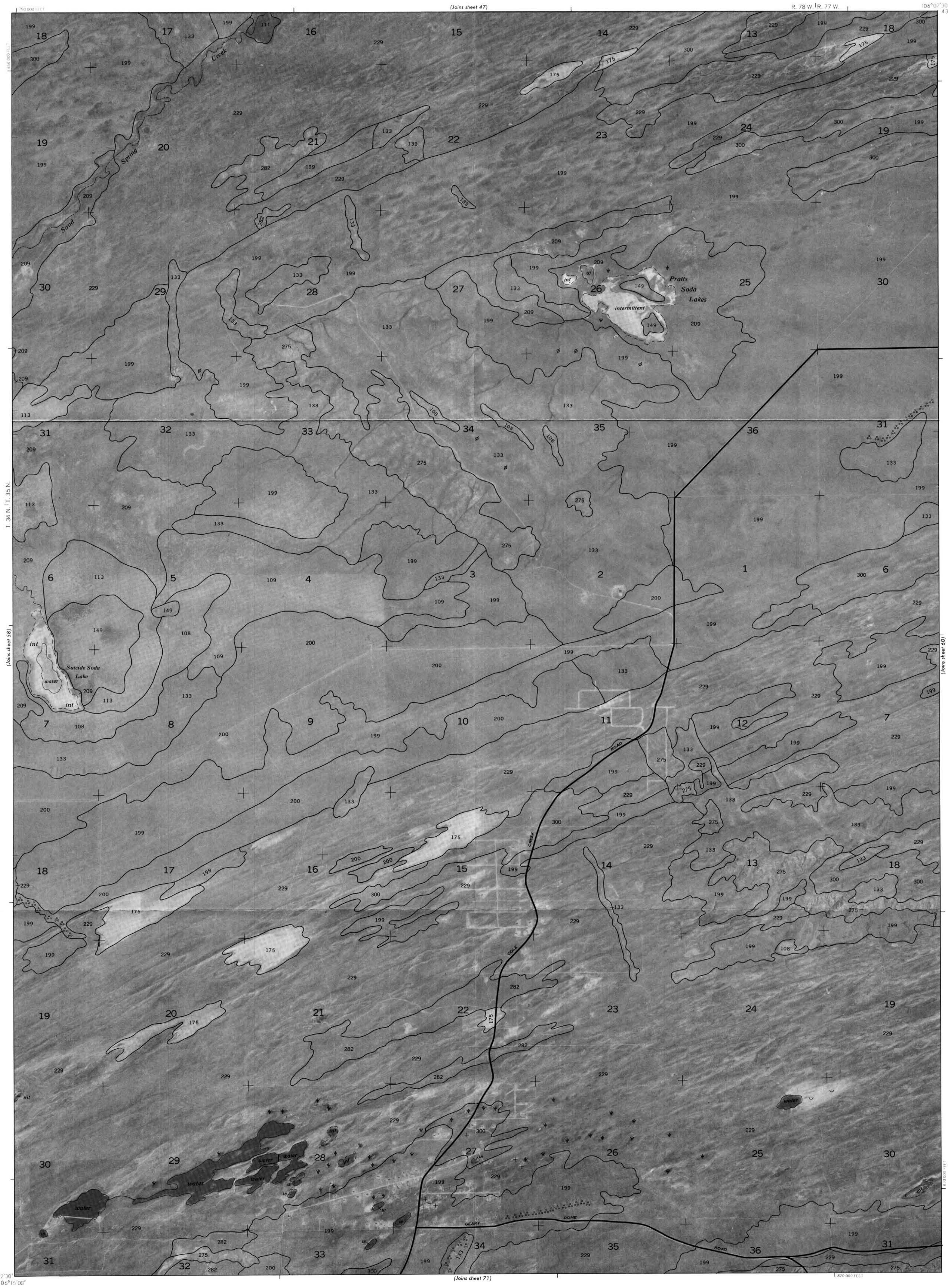


5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

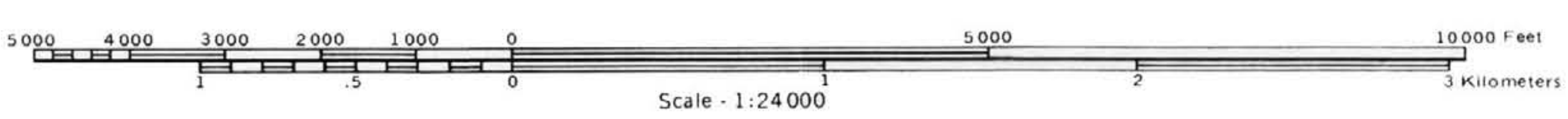
N

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 58

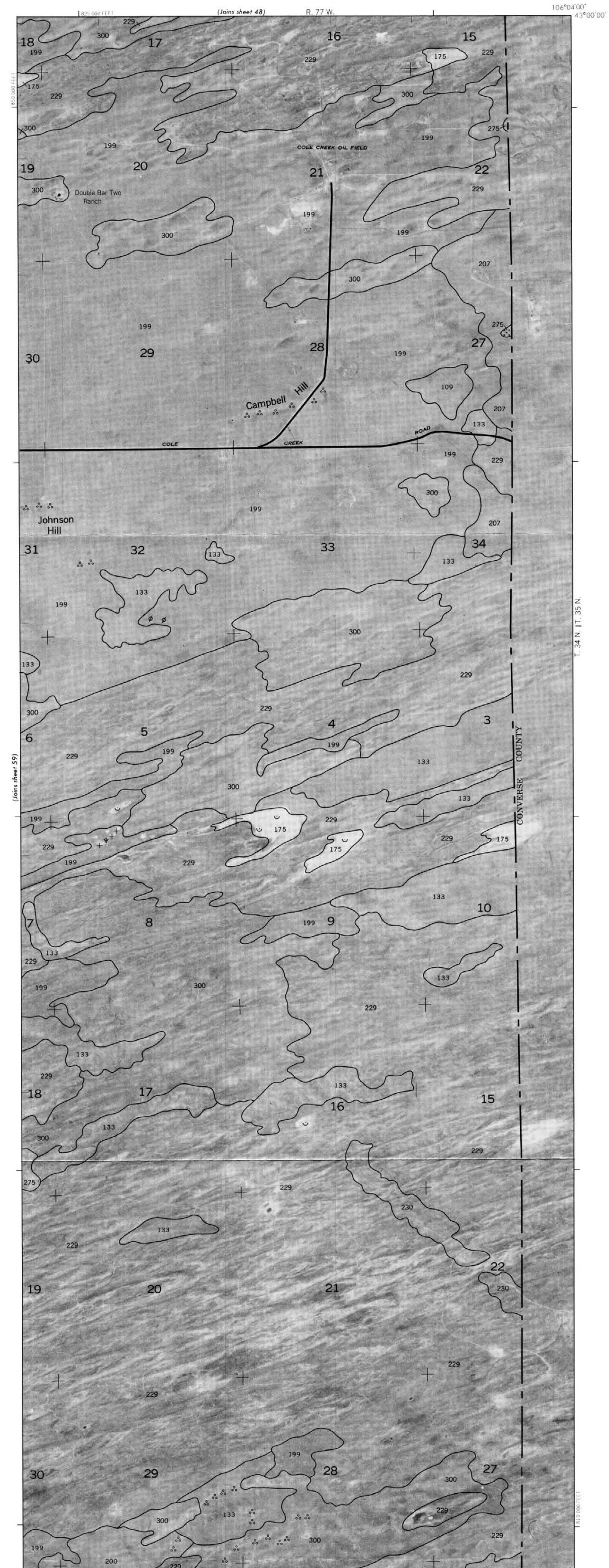


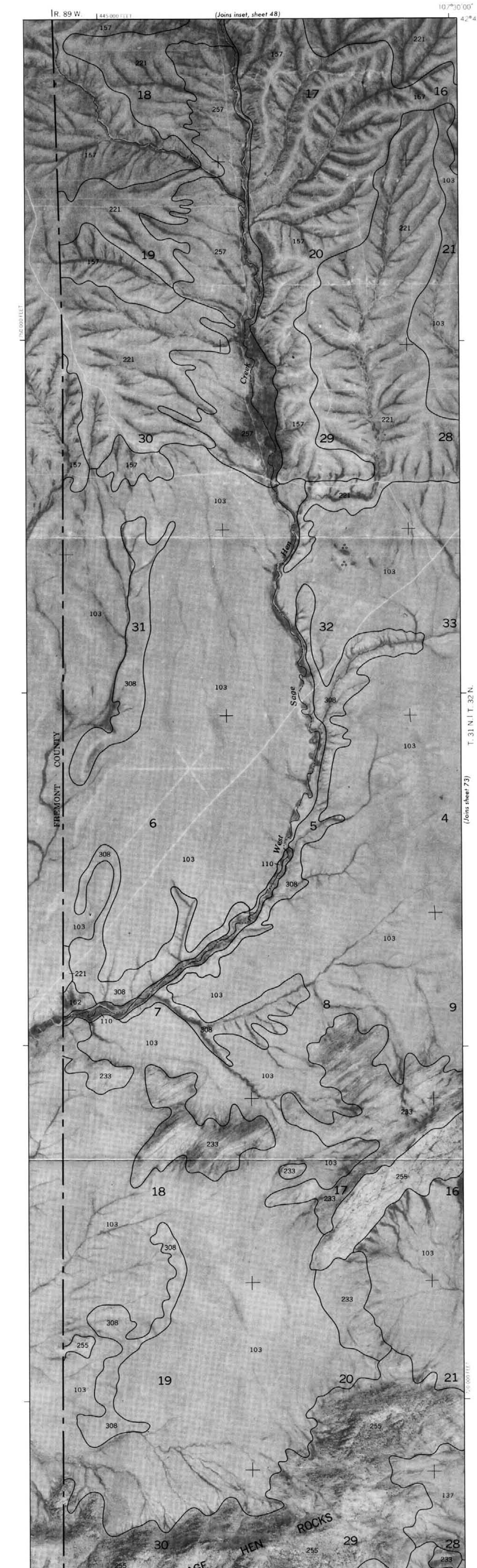
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



Scale - 1:24 000

NATRONA COUNTY AREA, WYOMING NO. 59

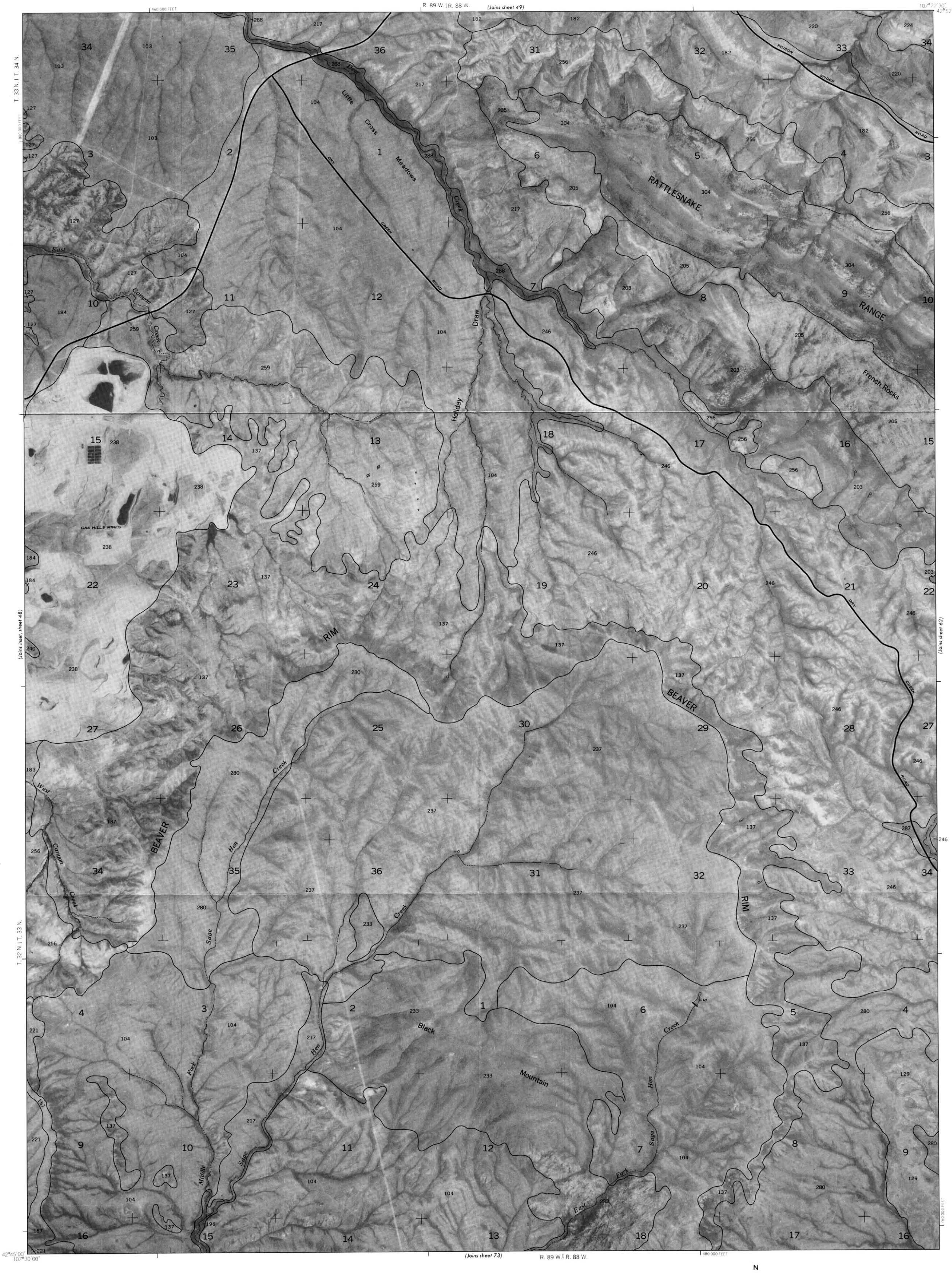




Scale - 1:24 000

N

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

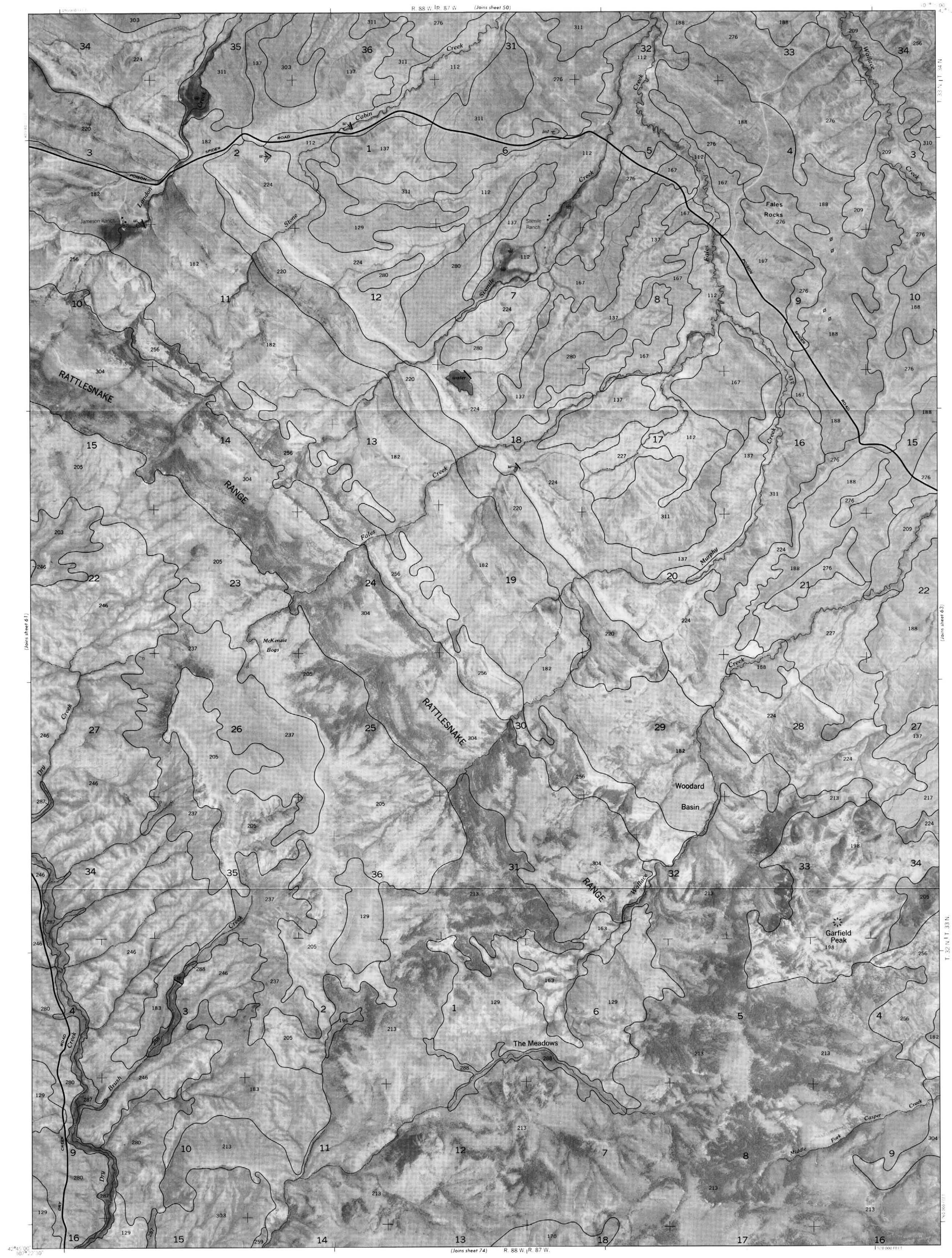


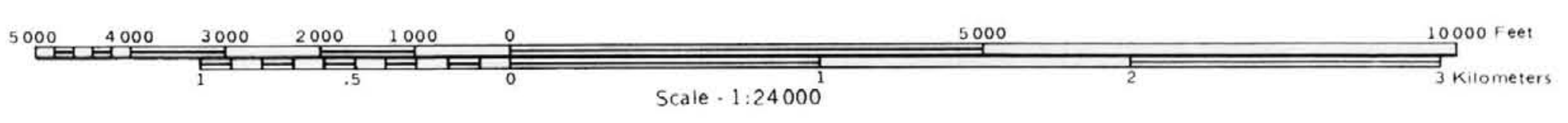
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

NATRONA COUNTY AREA, WYOMING NO. 61

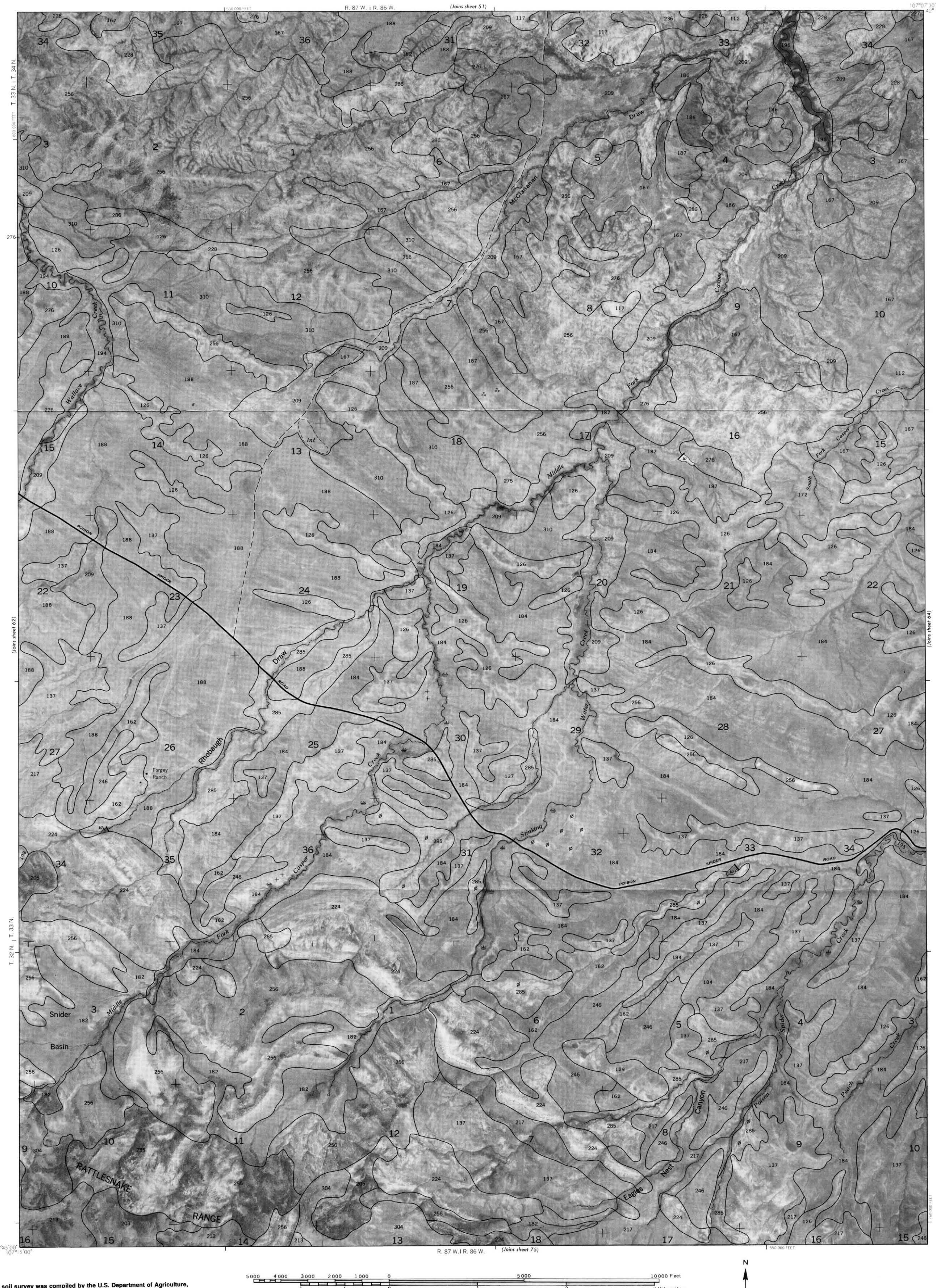




Scale - 1:24000

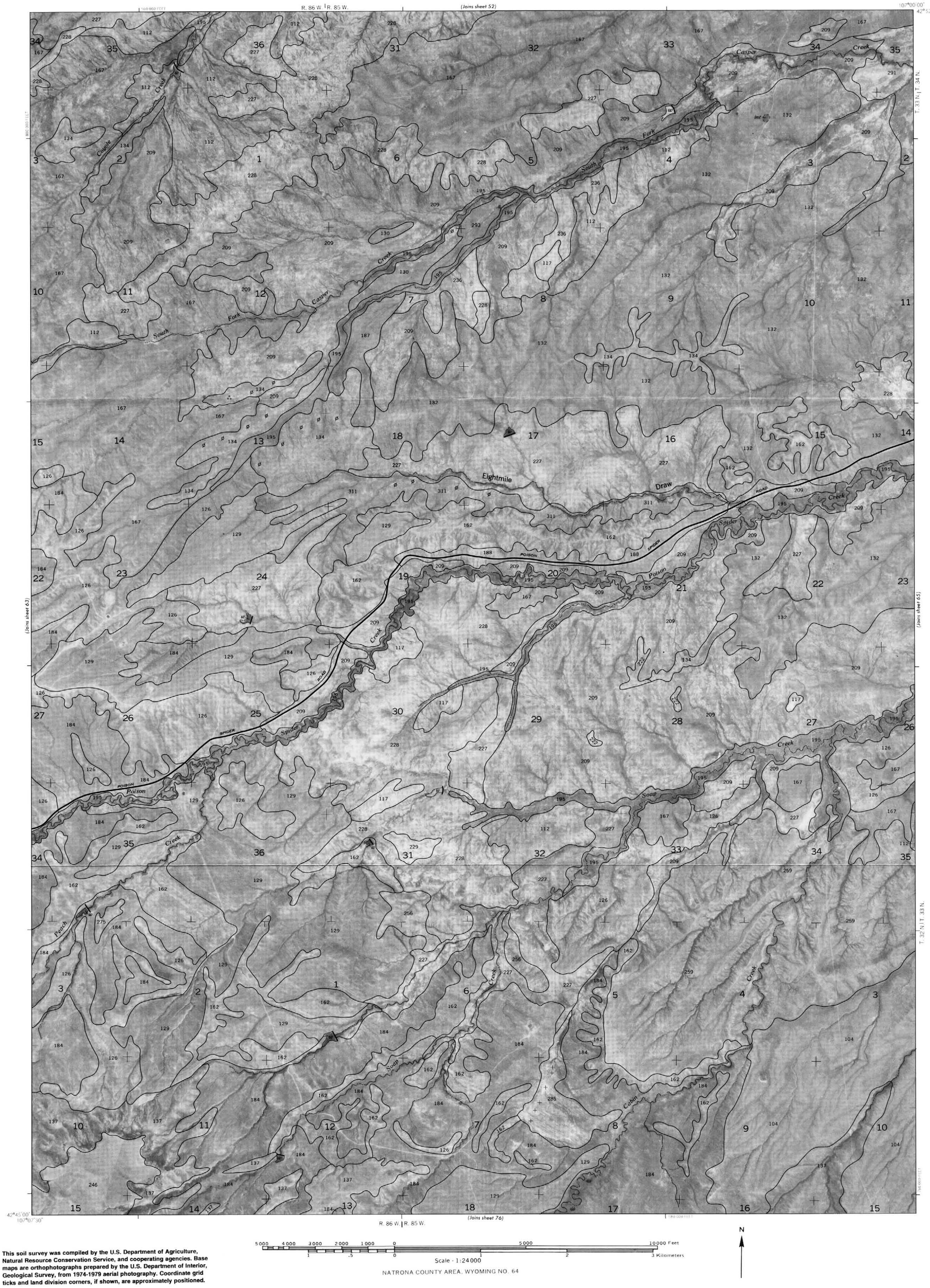
NATRONA COUNTY AREA, WYOMING NO. 62

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

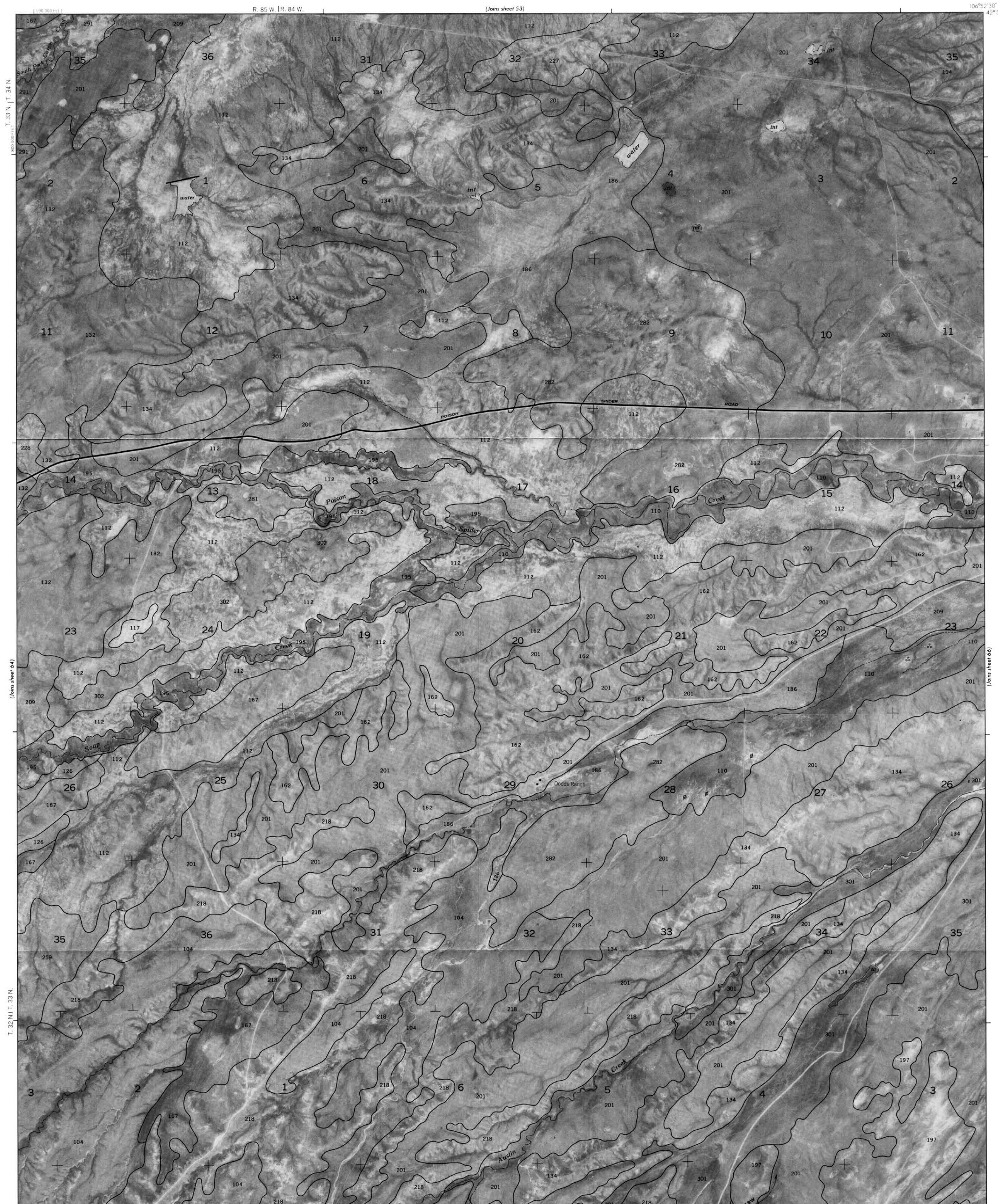
NATRONA COUNTY AREA, WYOMING NO. 63



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 64

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE



5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

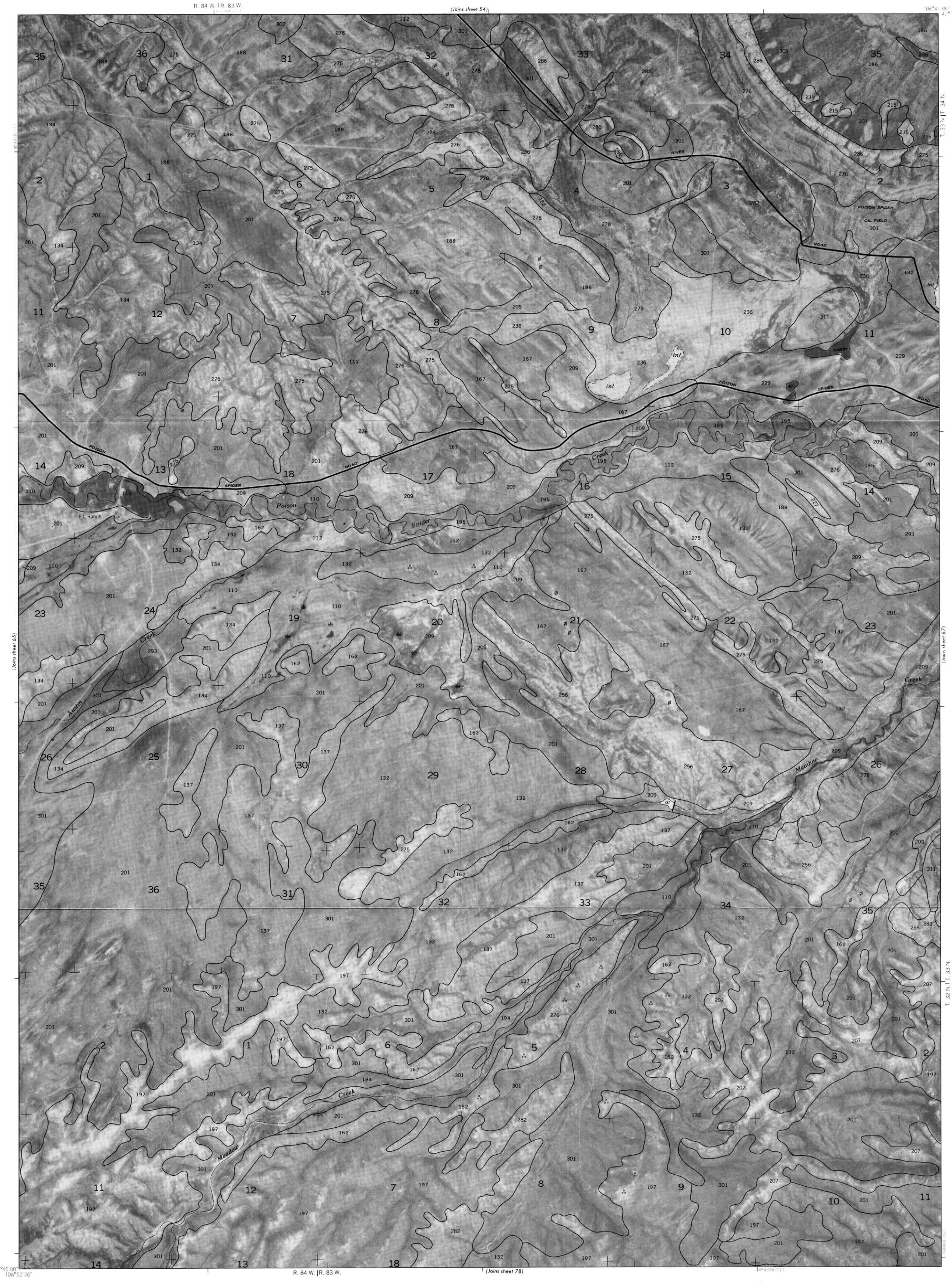
N

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 65

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 66
SOIL SURVEY OF NATRONA COUNTY AREA, WYOMING

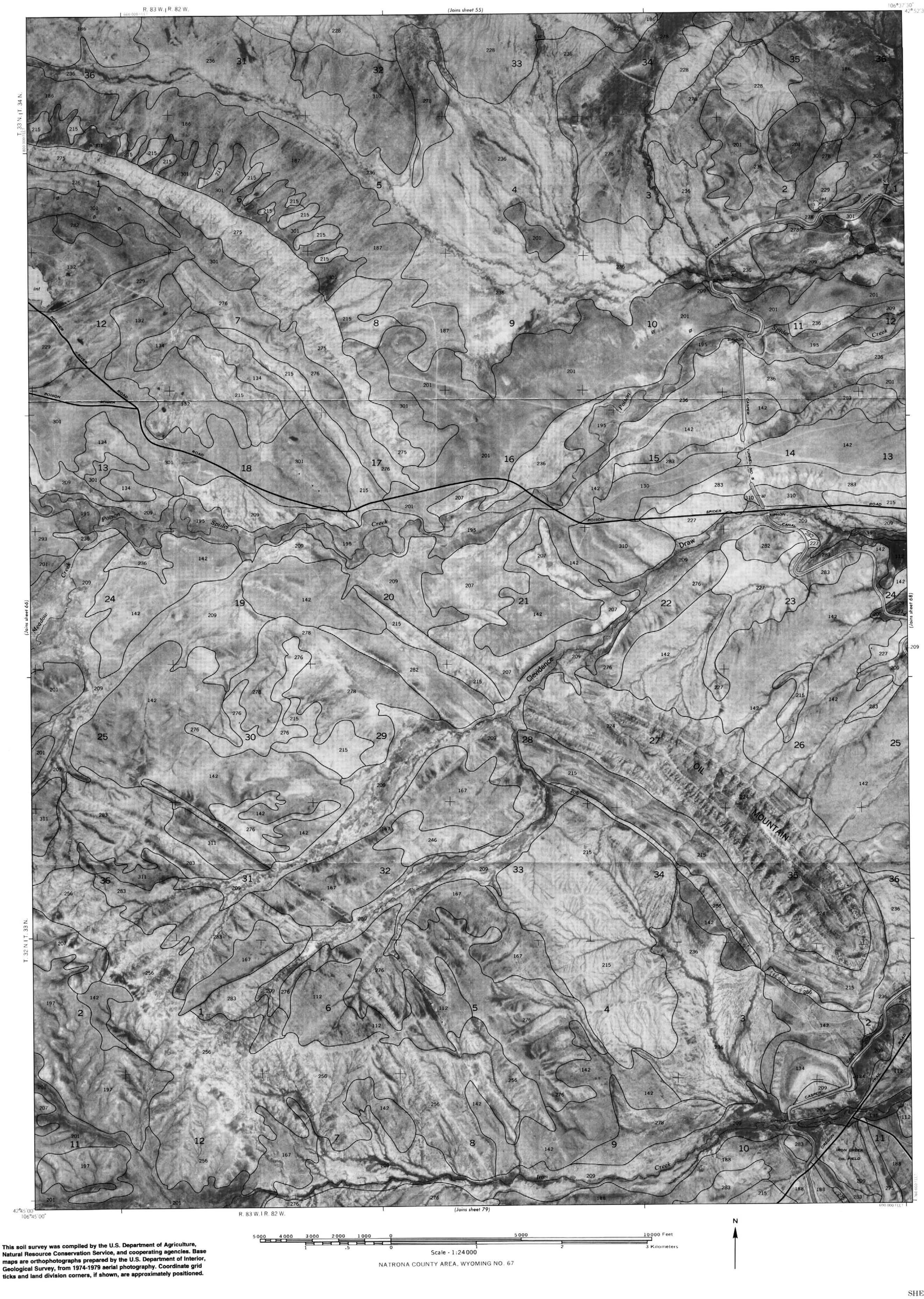


5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

N

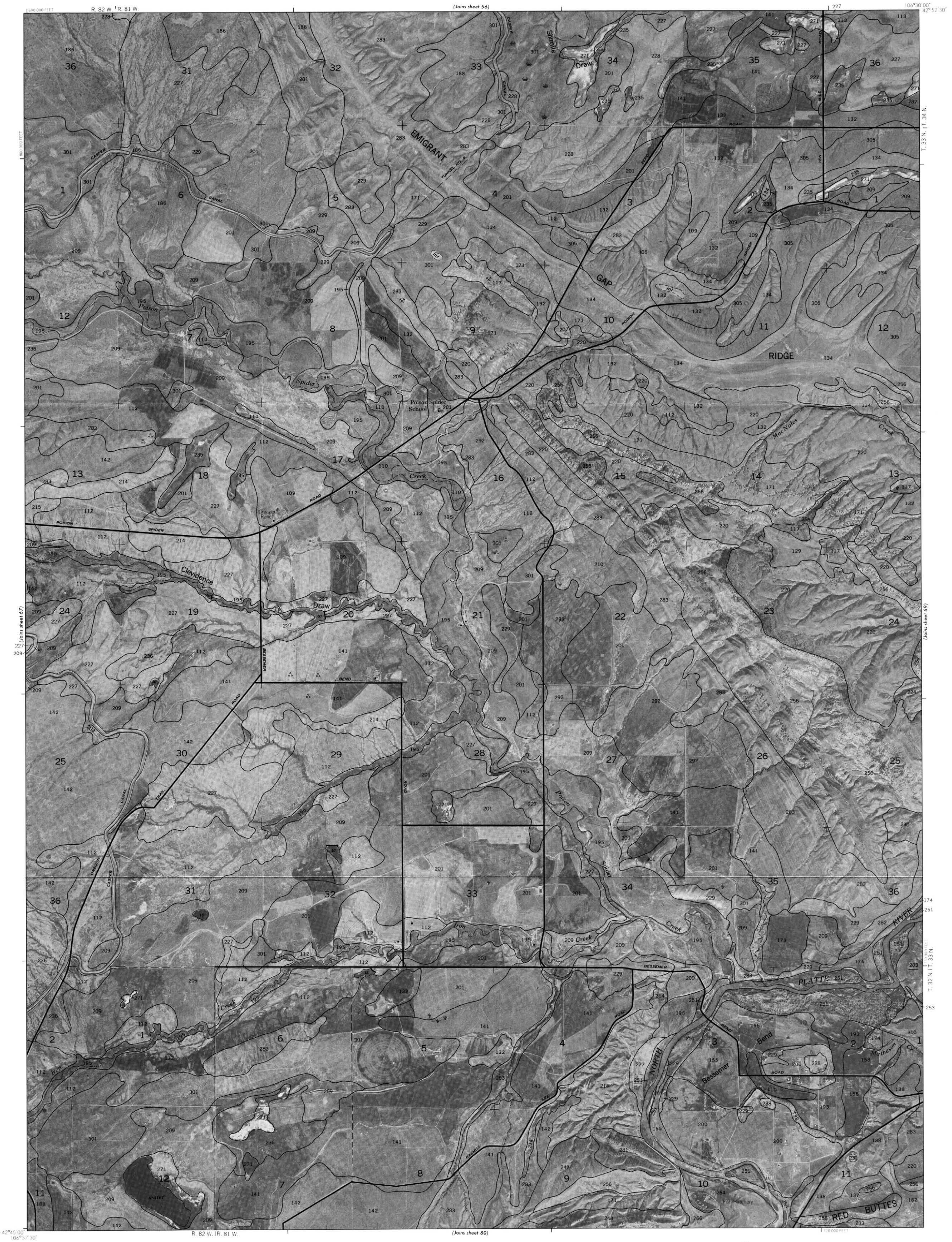
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 66



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 67

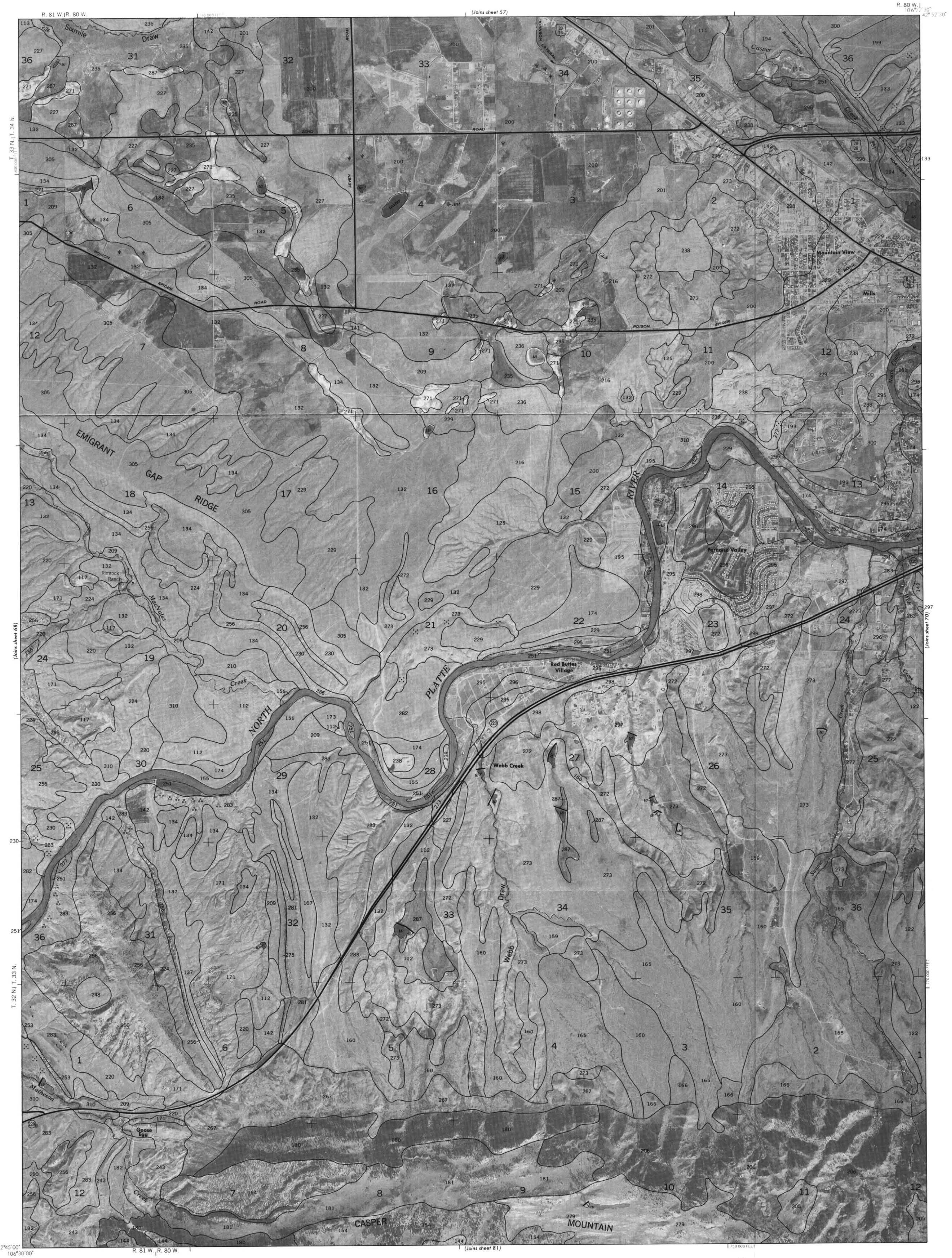


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

NATRONA COUNTY AREA, WYOMING NO. 68

N

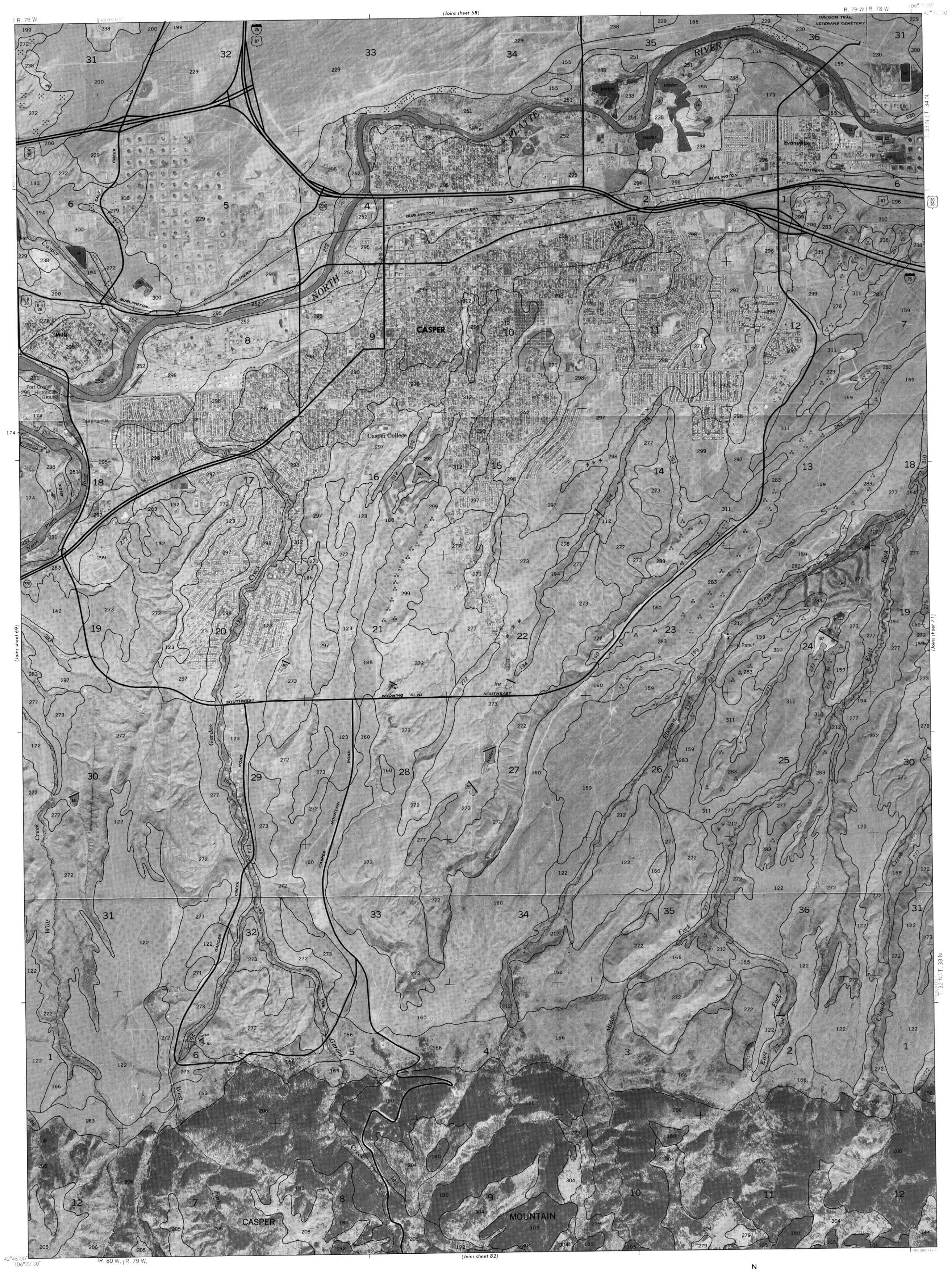


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

N

NATRONA COUNTY AREA, WYOMING NO. 69

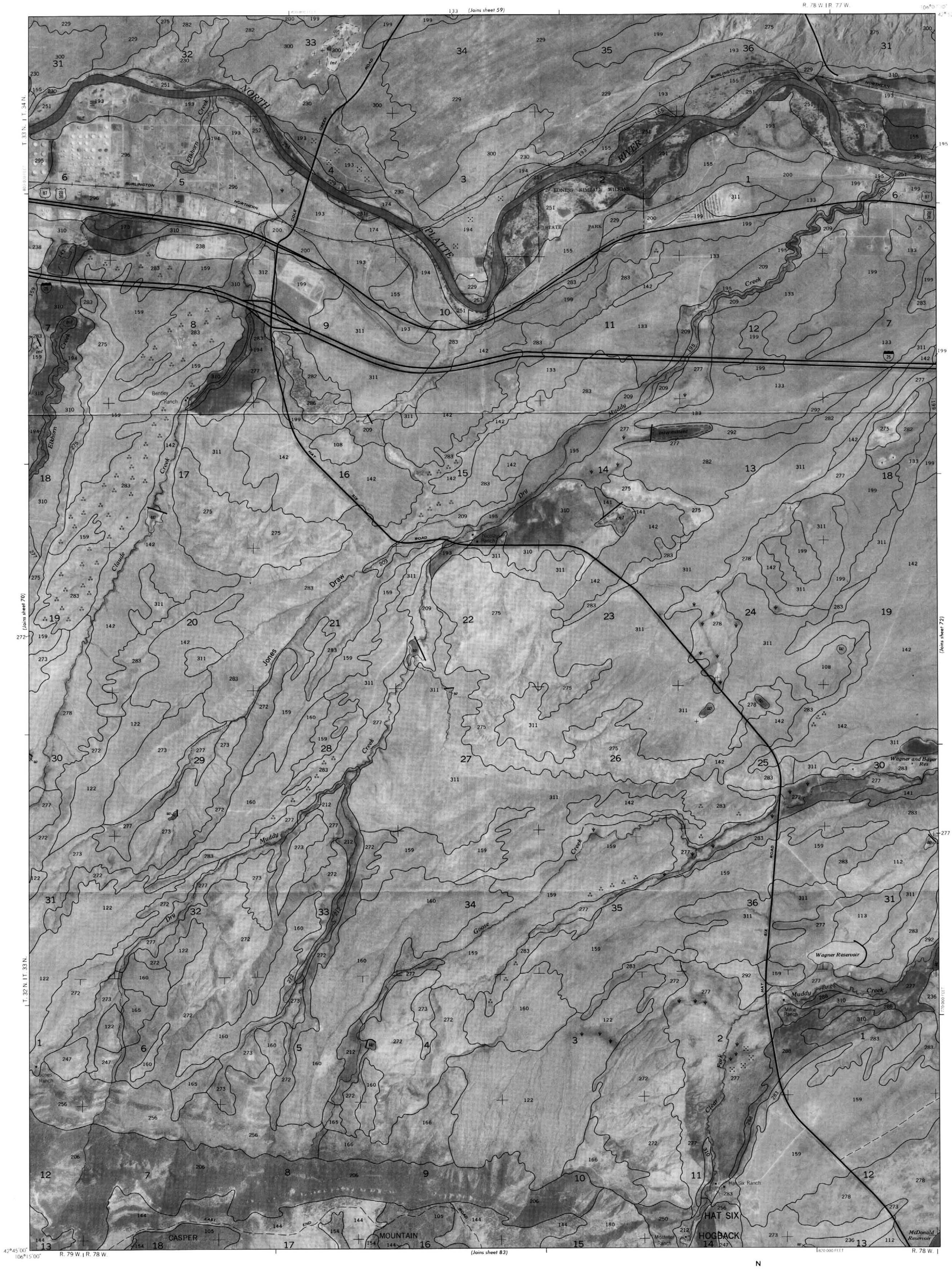


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

N

NATRONA COUNTY AREA, WYOMING NO. 70

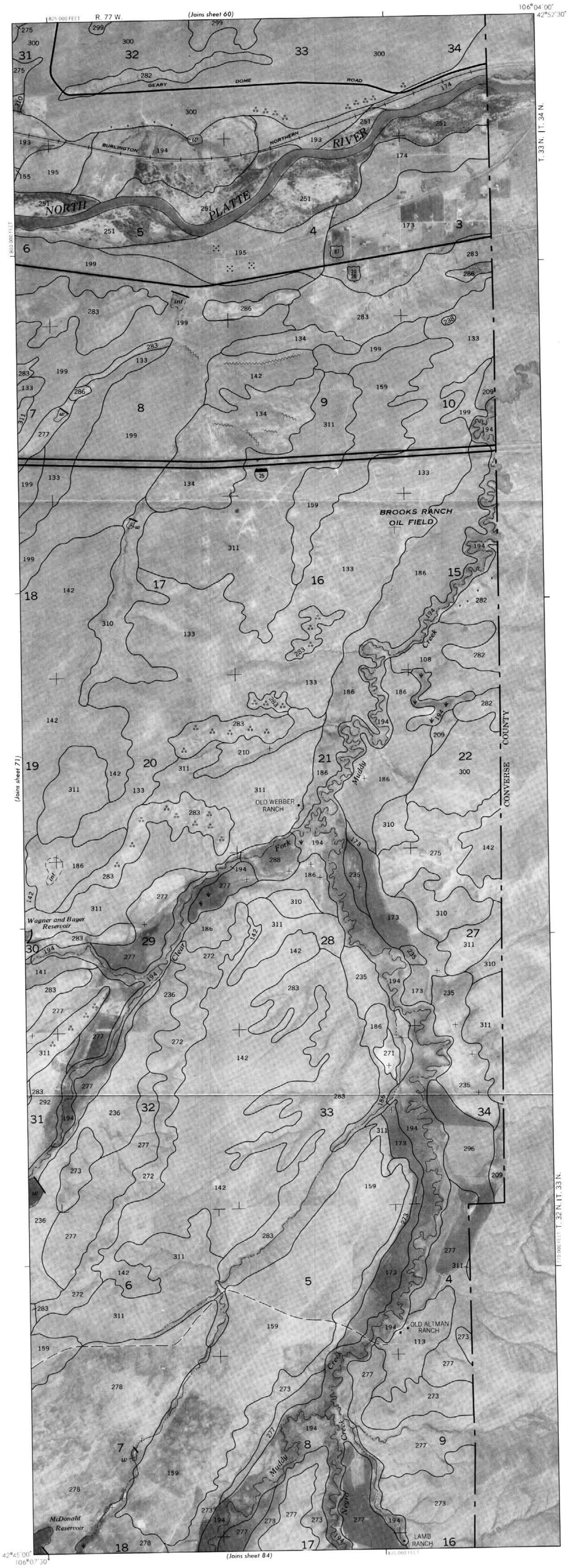


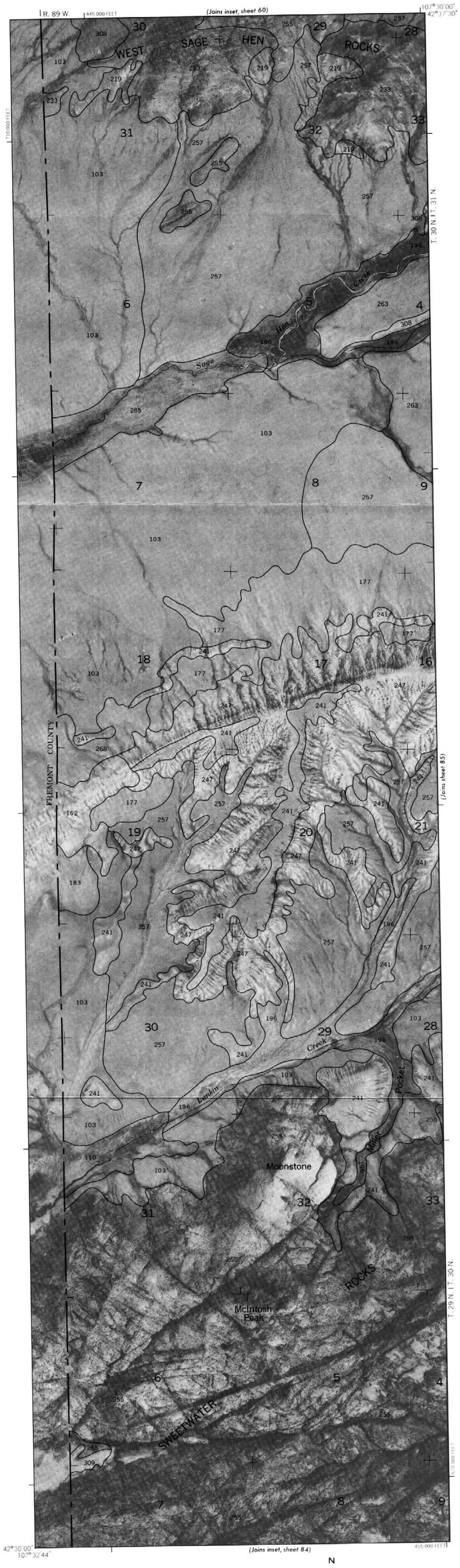
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

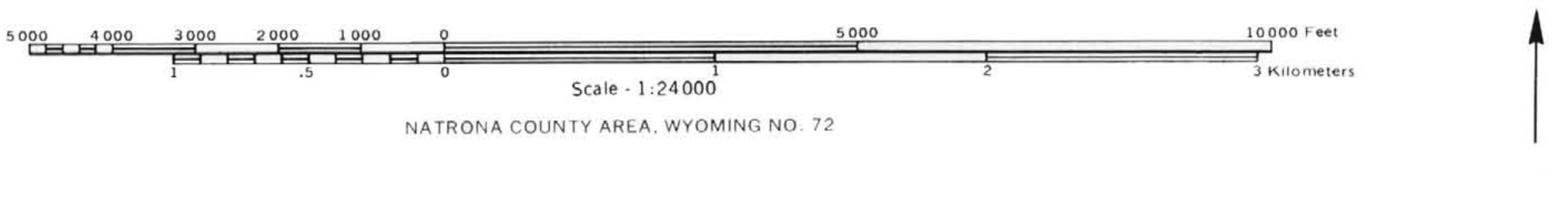
5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

NATRONA COUNTY AREA, WYOMING NO. 71



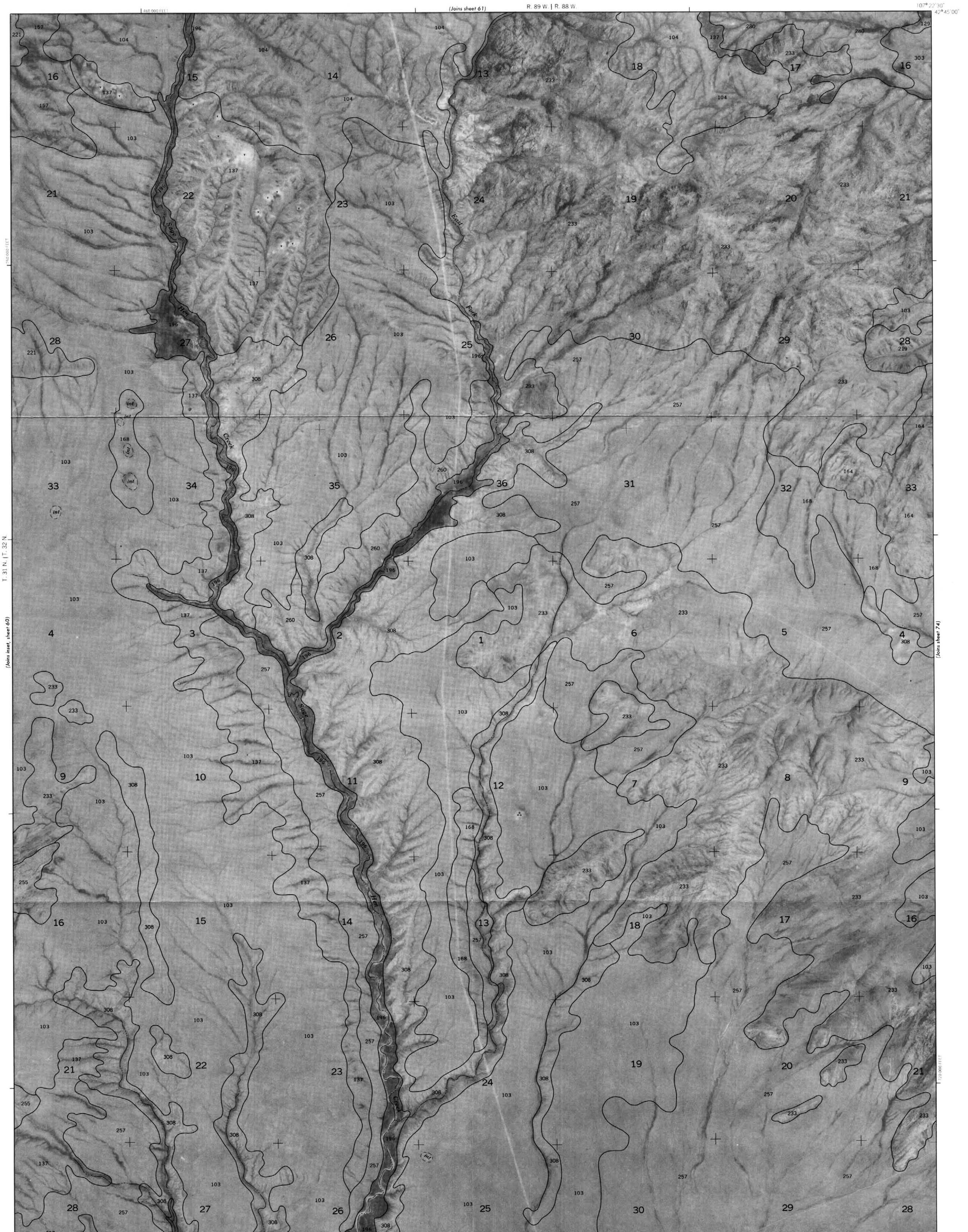




Scale - 1:24000

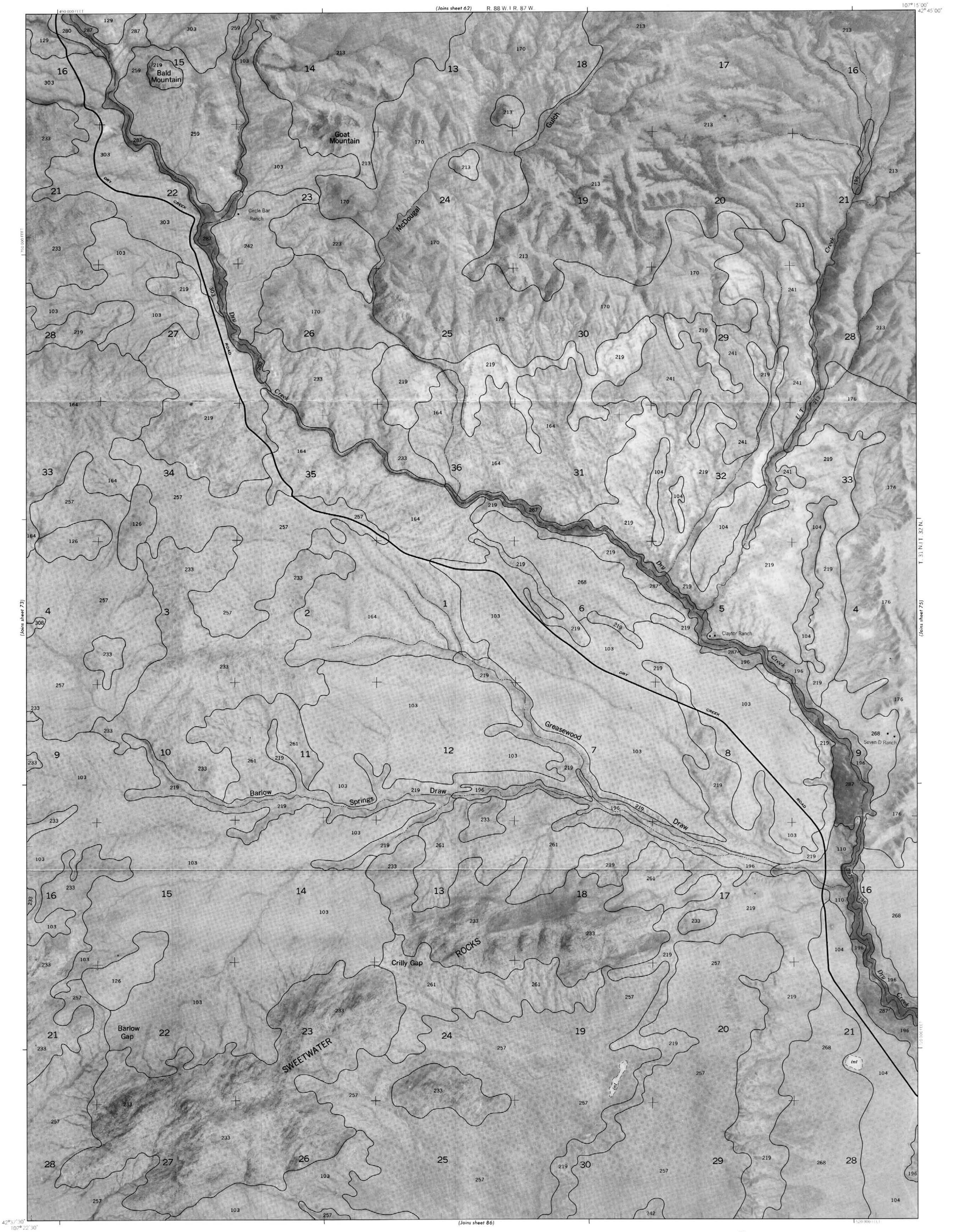
NATRONA COUNTY AREA, WYOMING NO. 72

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



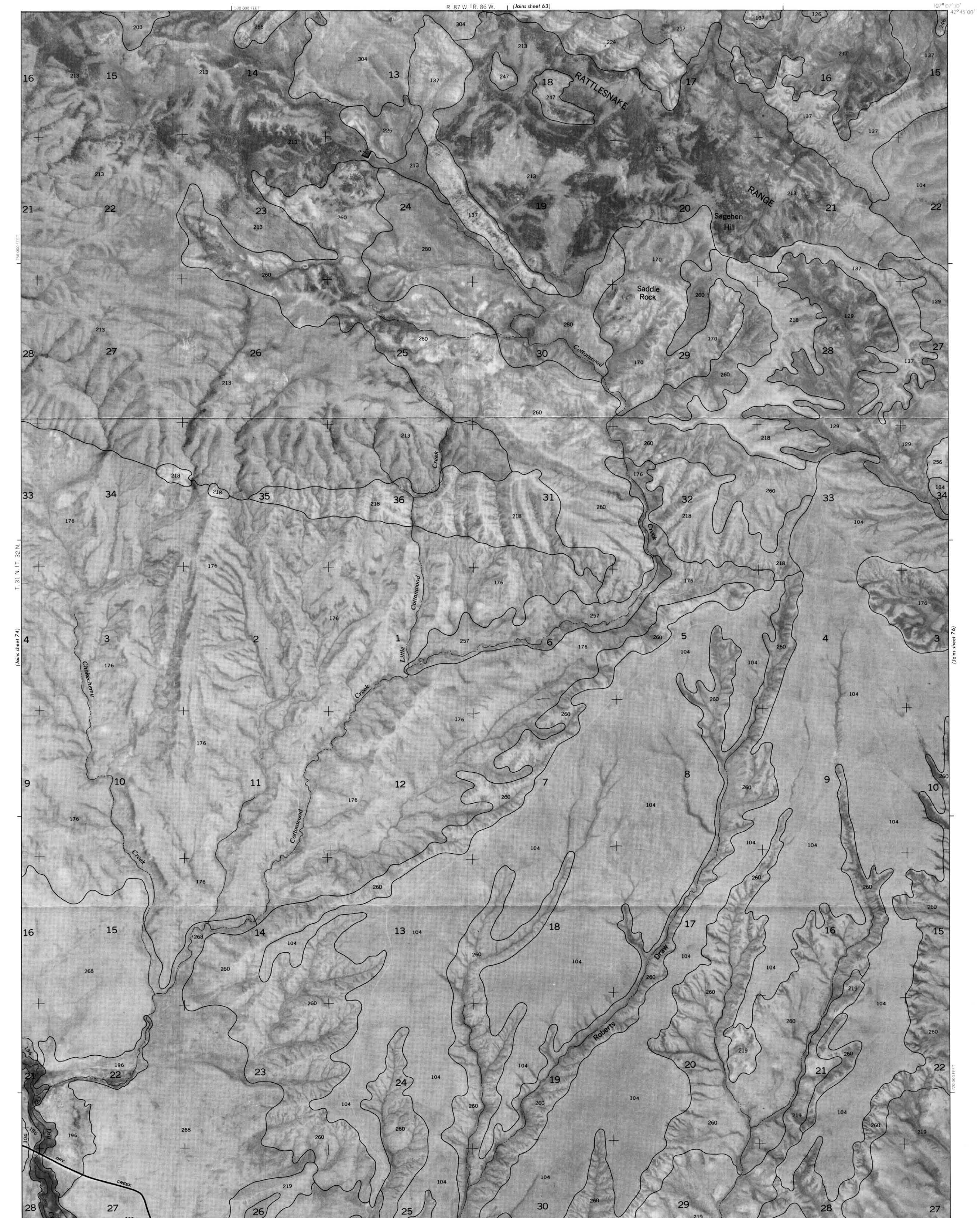
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000
NATRONA COUNTY AREA, WYOMING NO. 73



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 74

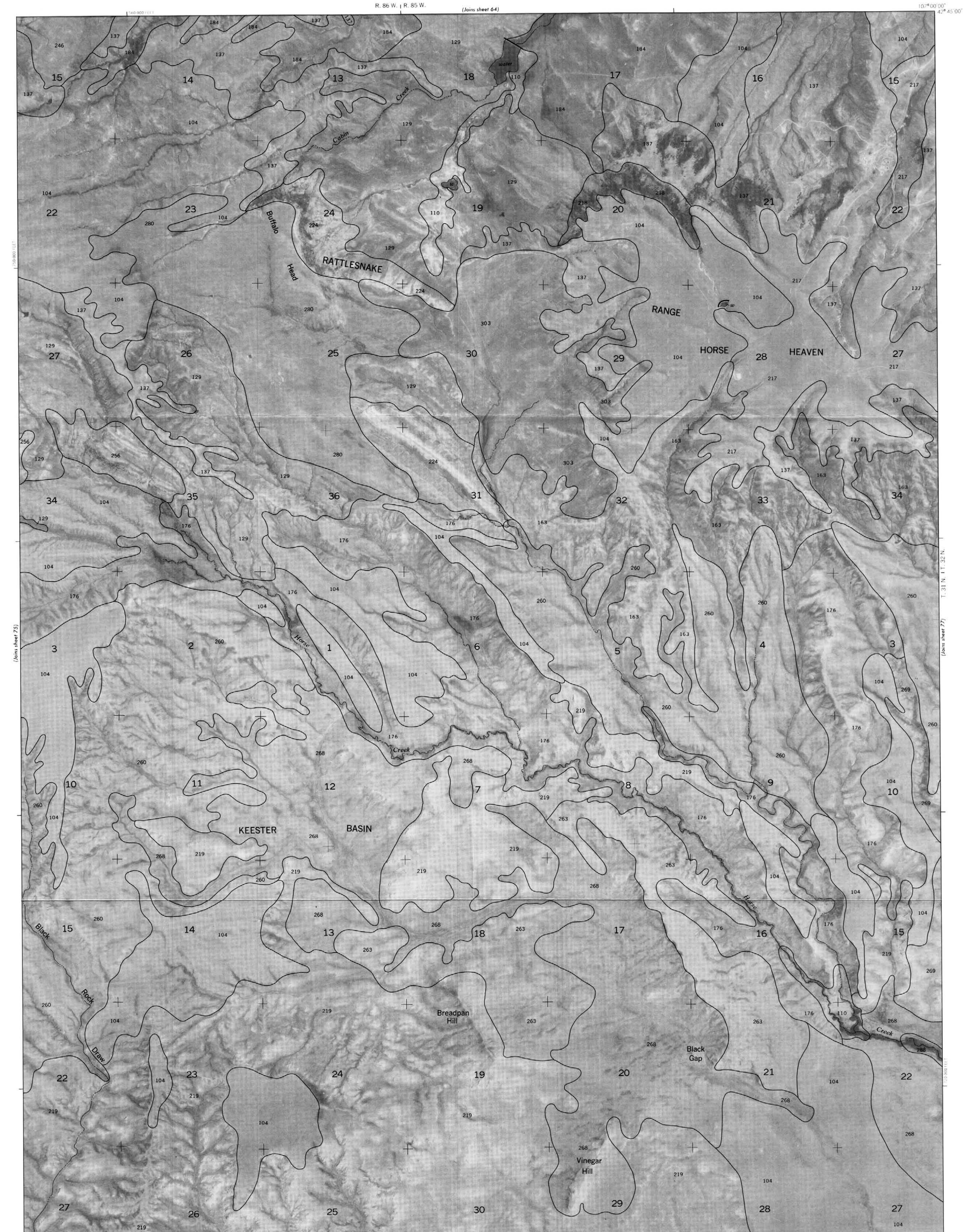


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

NATRONA COUNTY AREA, WYOMING NO. 75

N



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet

1 .5 0 1 2 3 Kilometers

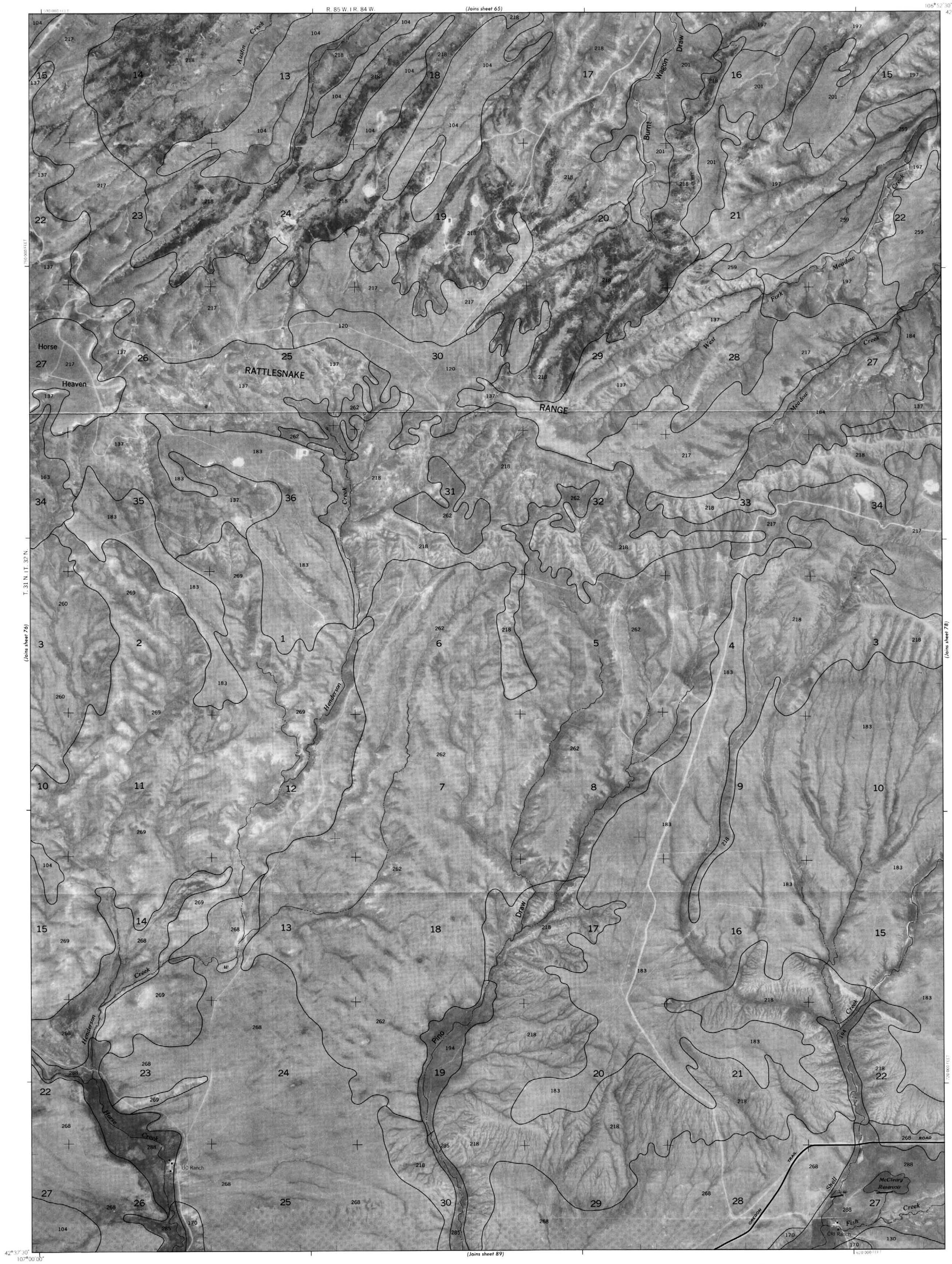
Scale - 1:24000

N

NATRONA COUNTY AREA, WYOMING NO. 76

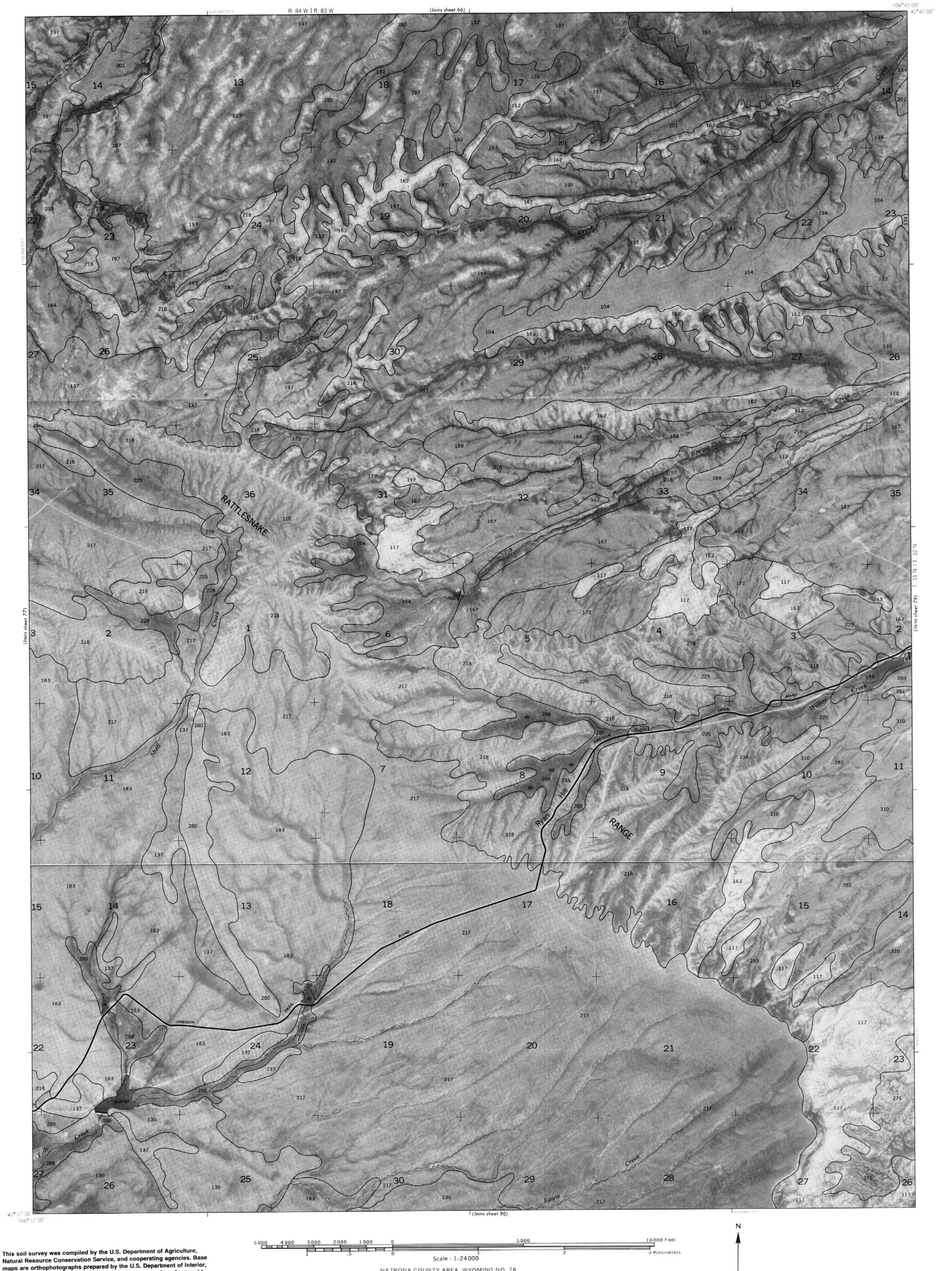
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 77
SOIL SURVEY OF NATRONA COUNTY AREA, WYOMING



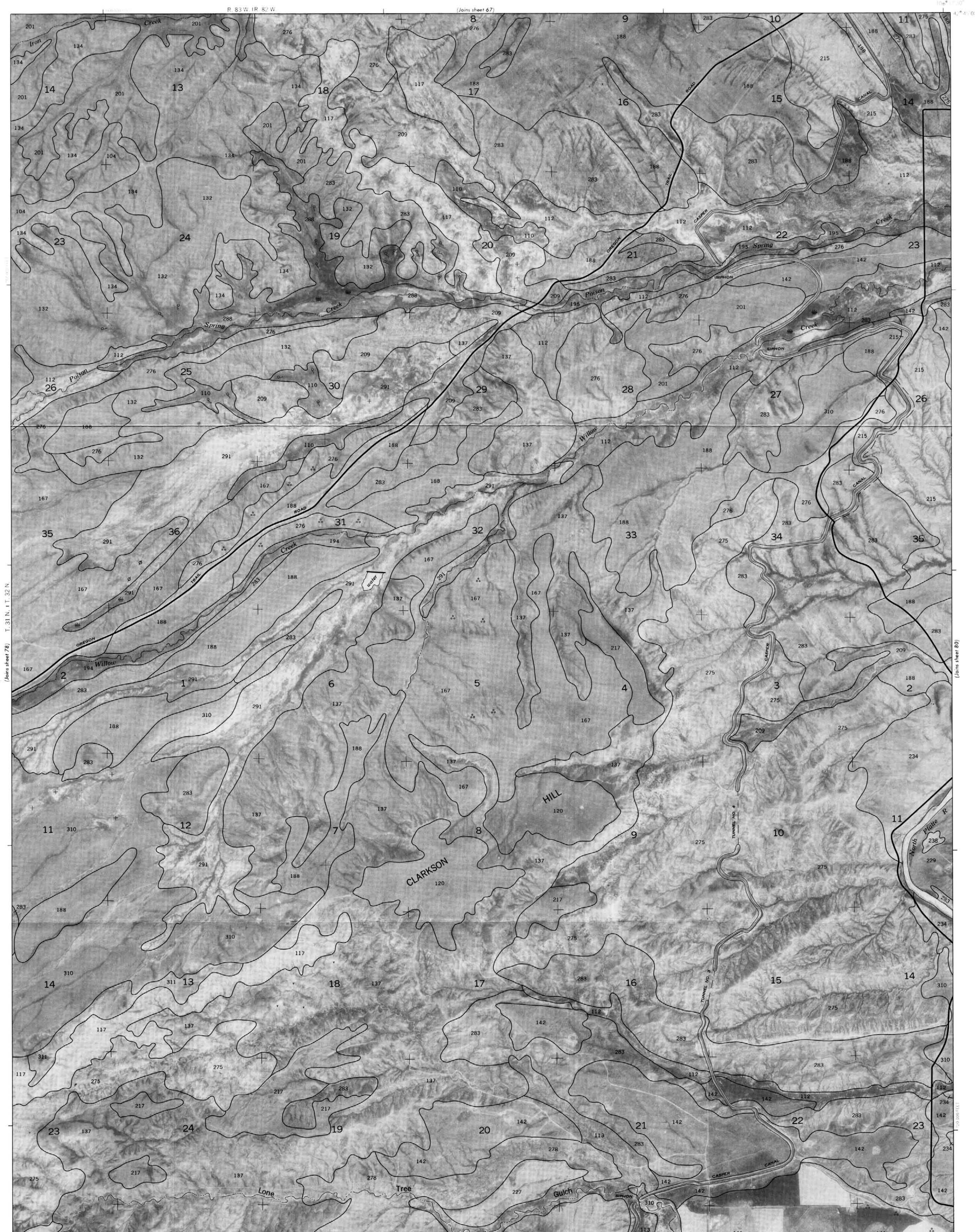
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 77



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 78

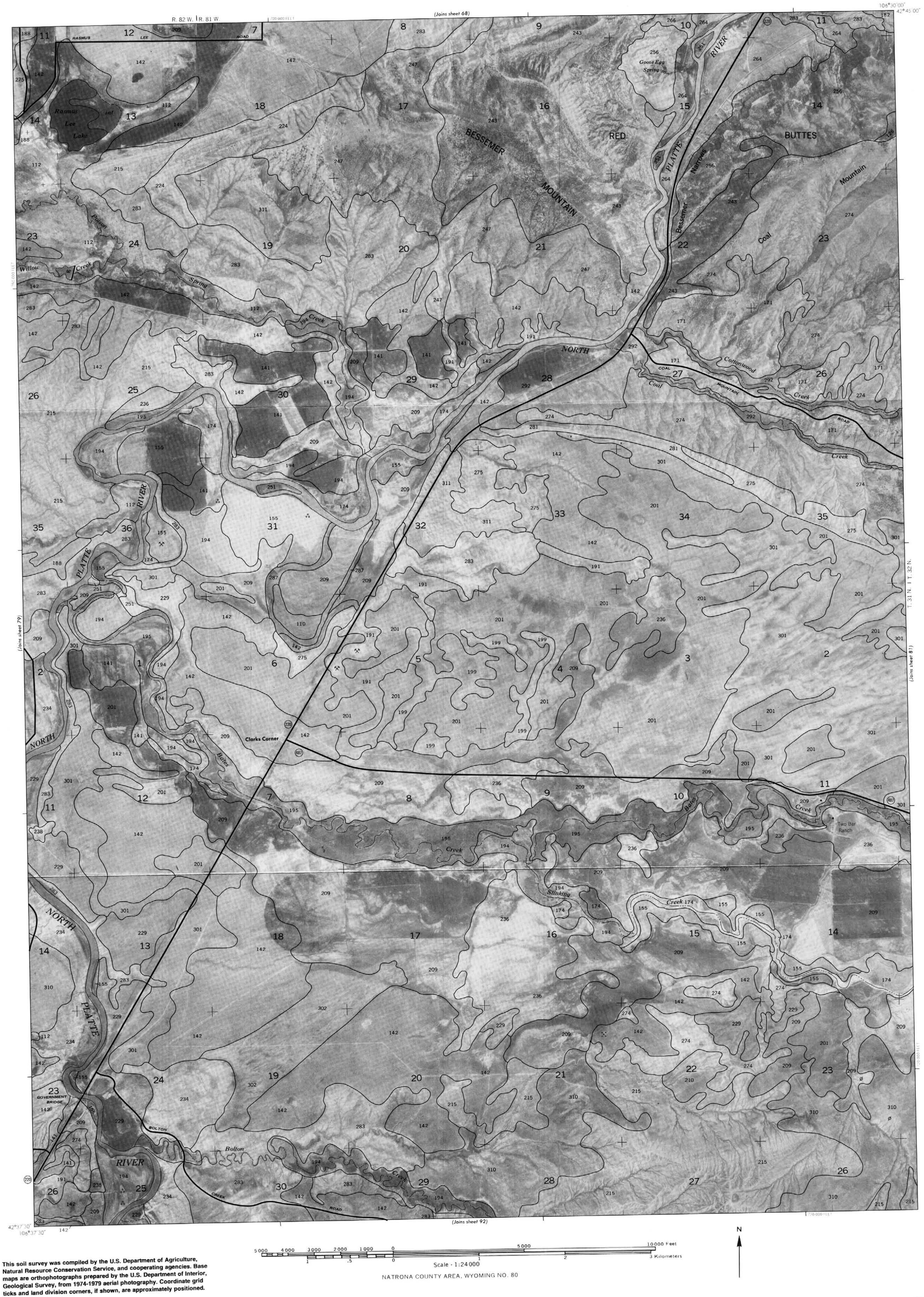


5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

NATRONA COUNTY AREA, WYOMING NO. 79

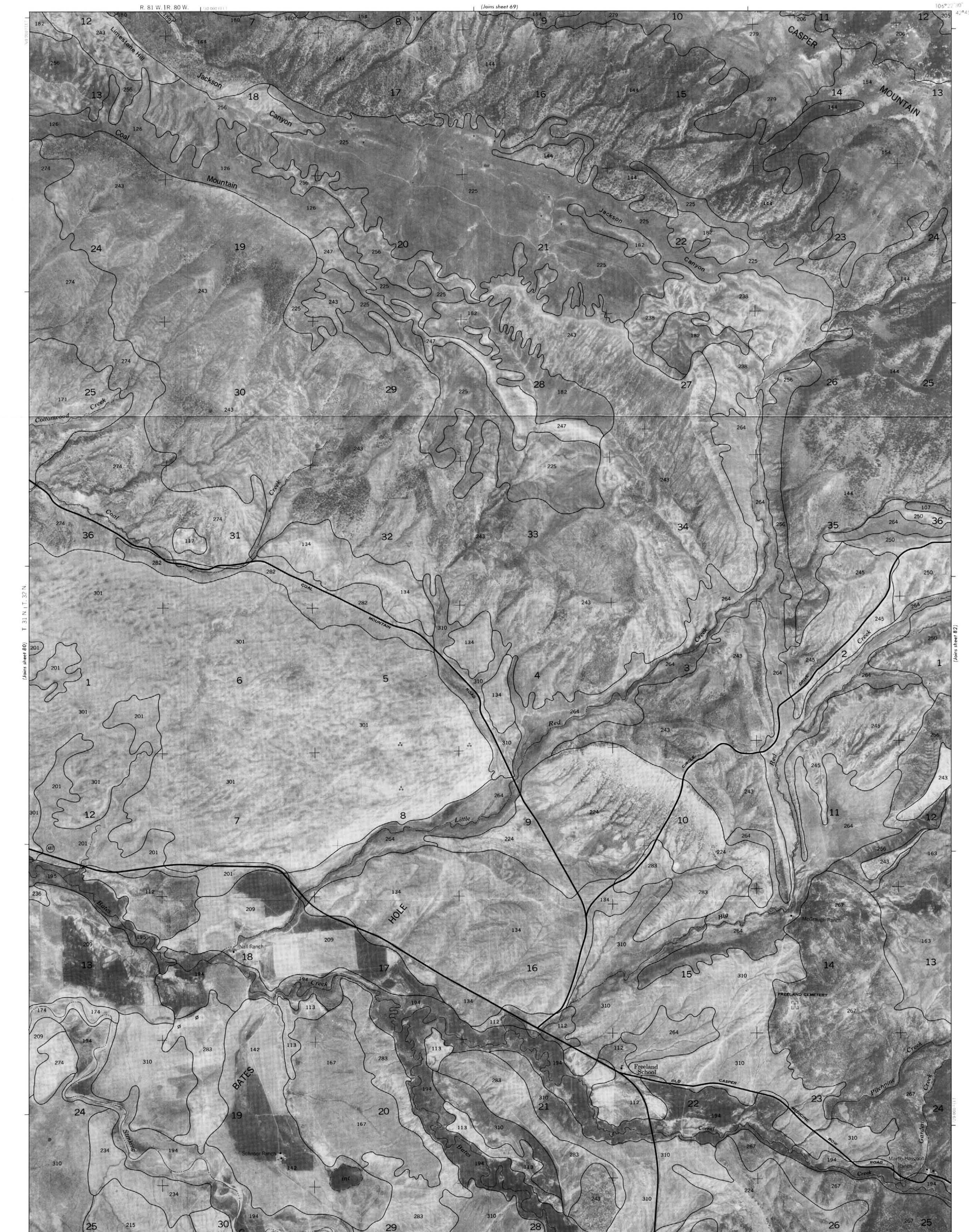
N

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

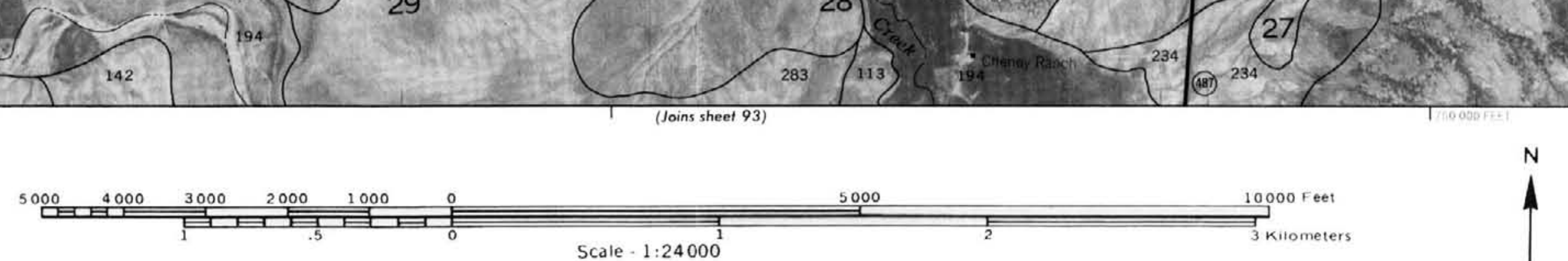


NATRONA COUNTY AREA, WYOMING NO. 80

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

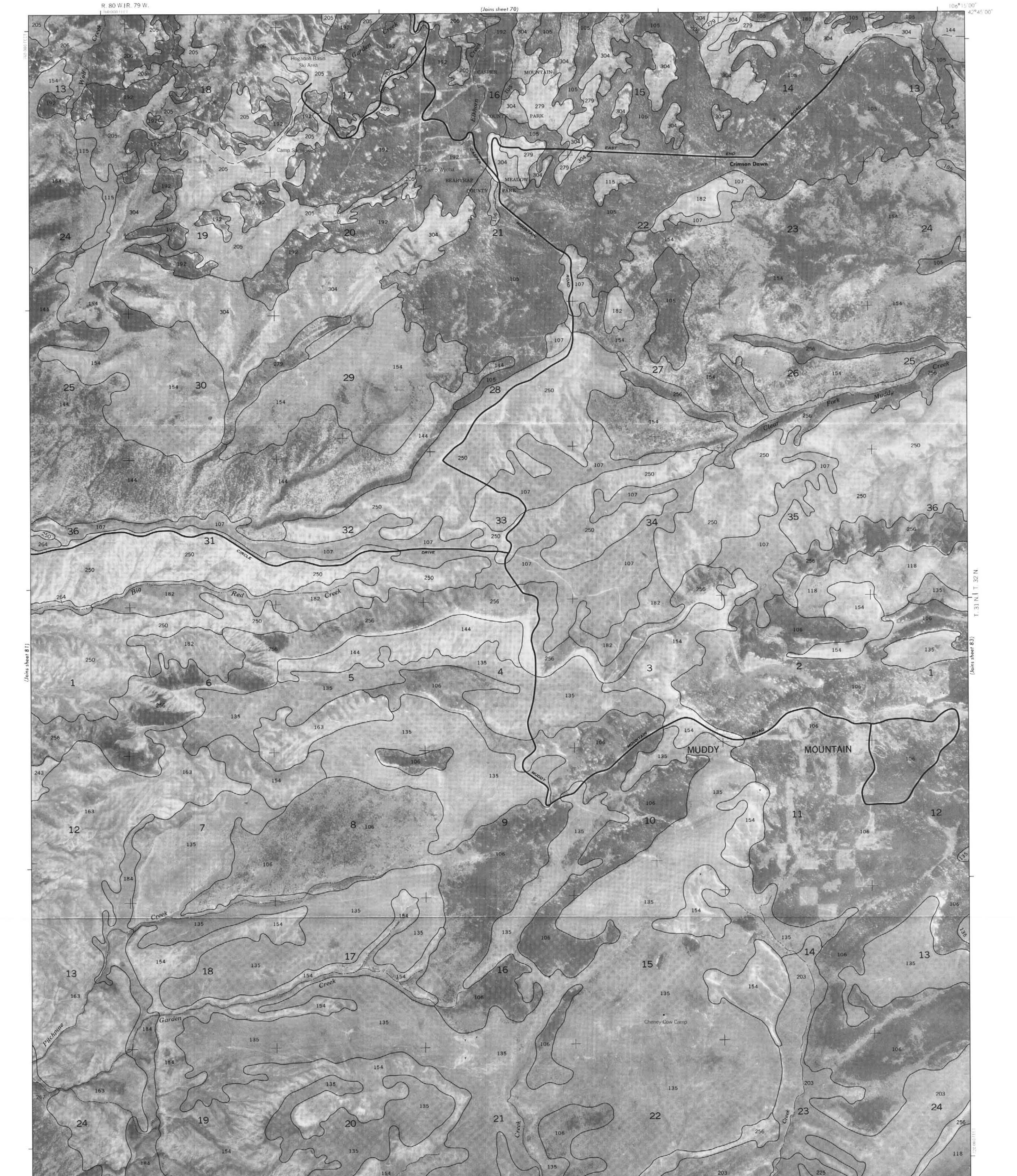


Scale - 1:24000

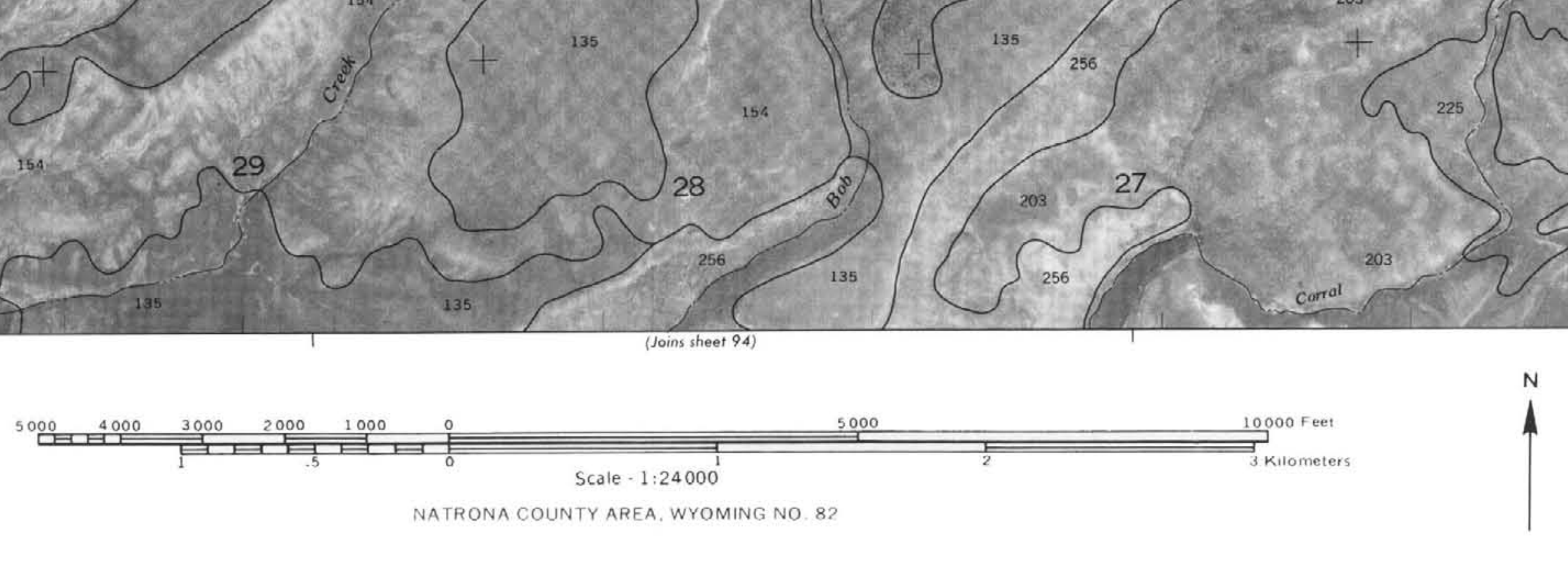
NATRONA COUNTY AREA, WYOMING NO. 81

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 82
SOIL SURVEY OF NATRONA COUNTY AREA, WYOMING

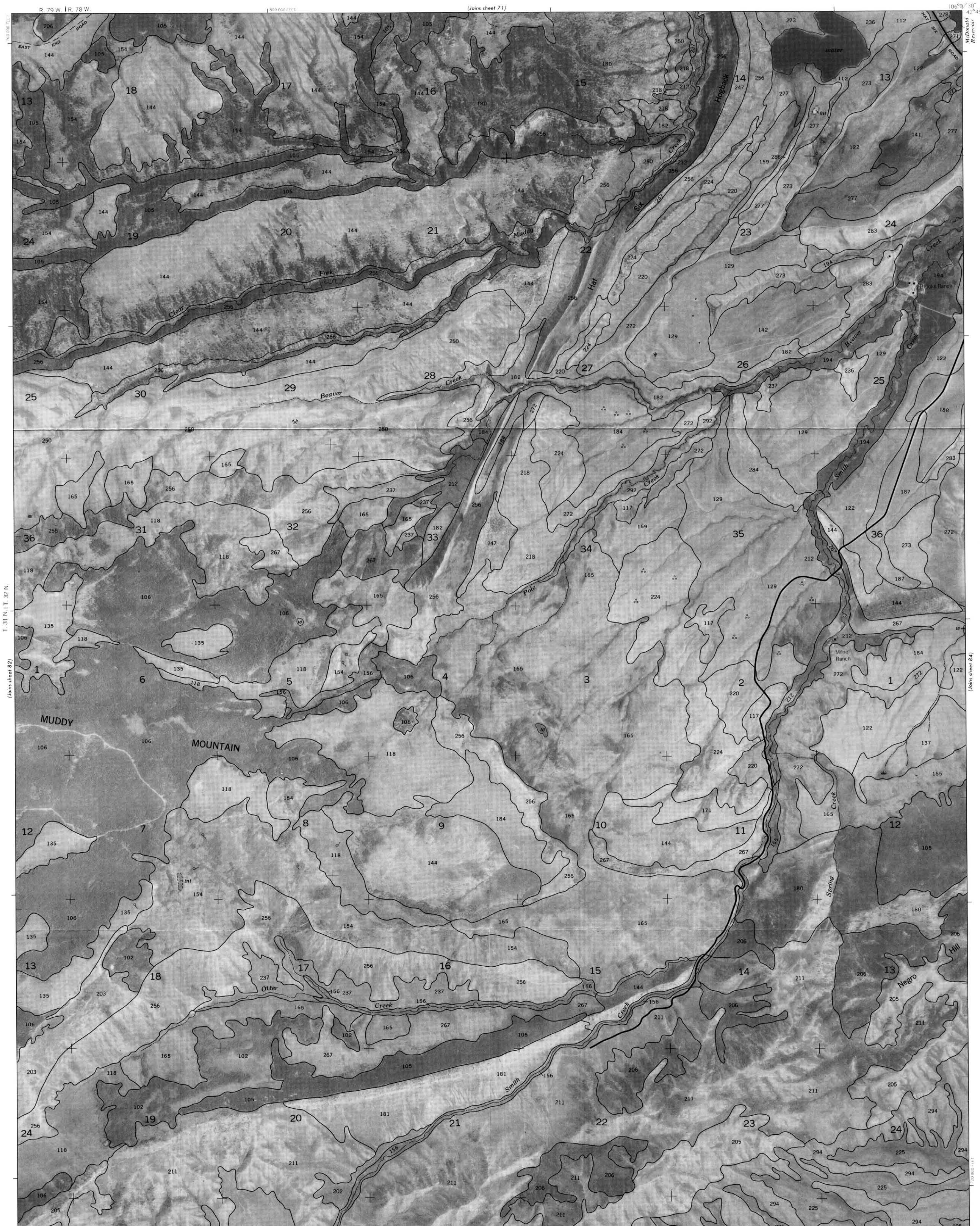


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



Scale - 1:24 000

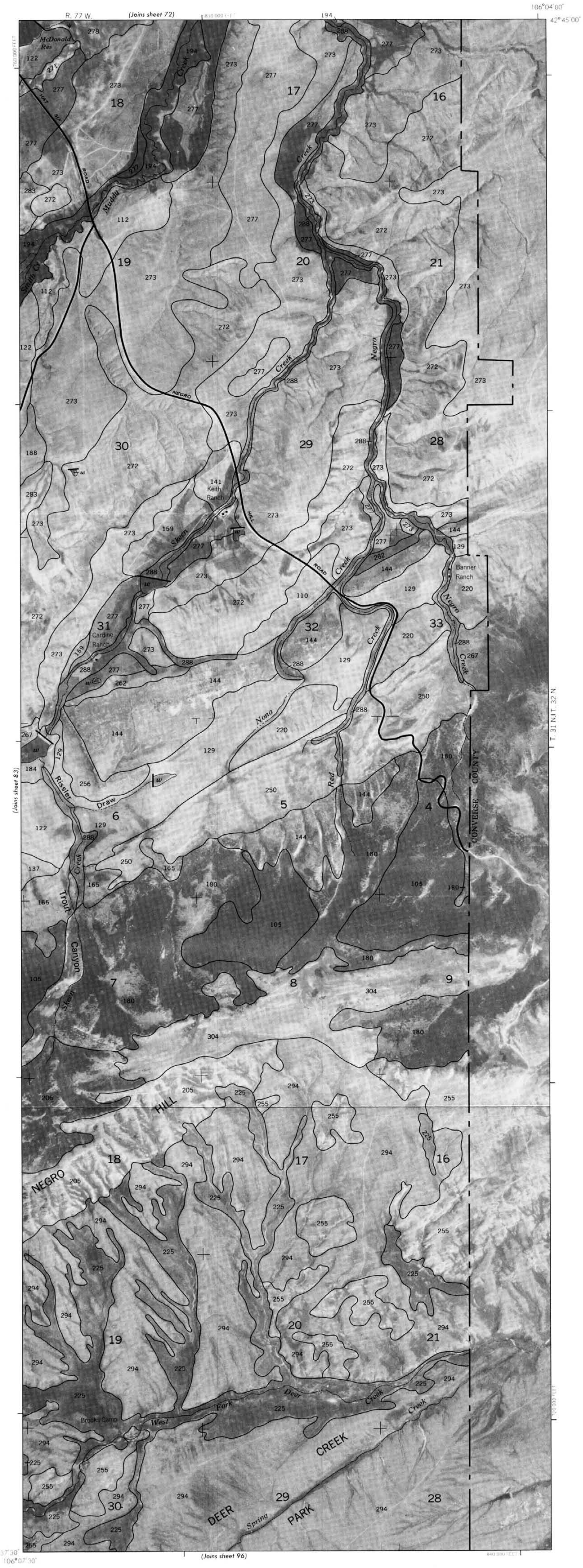
NATRONA COUNTY AREA, WYOMING NO. 82

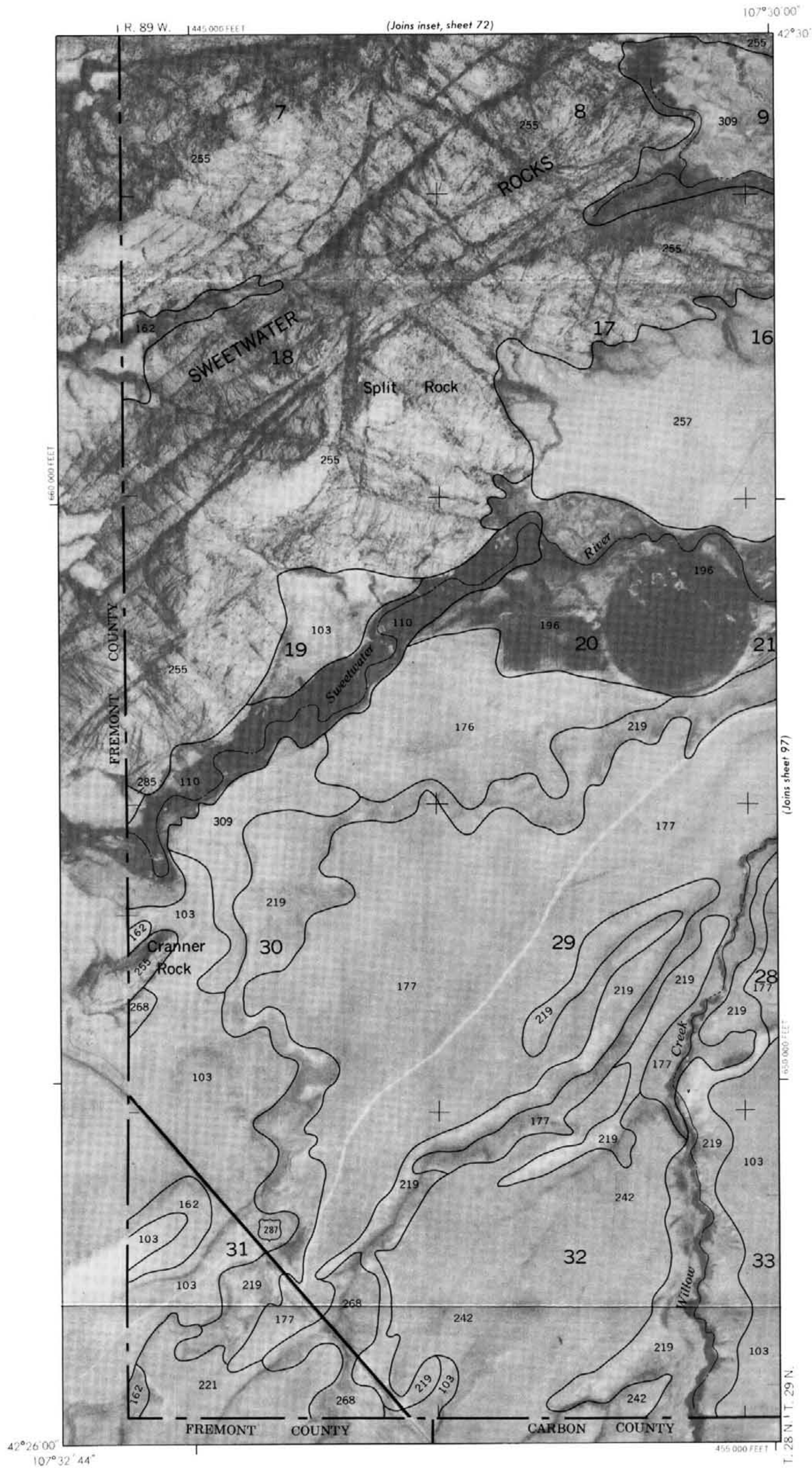


Scale - 1:24 000

N

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



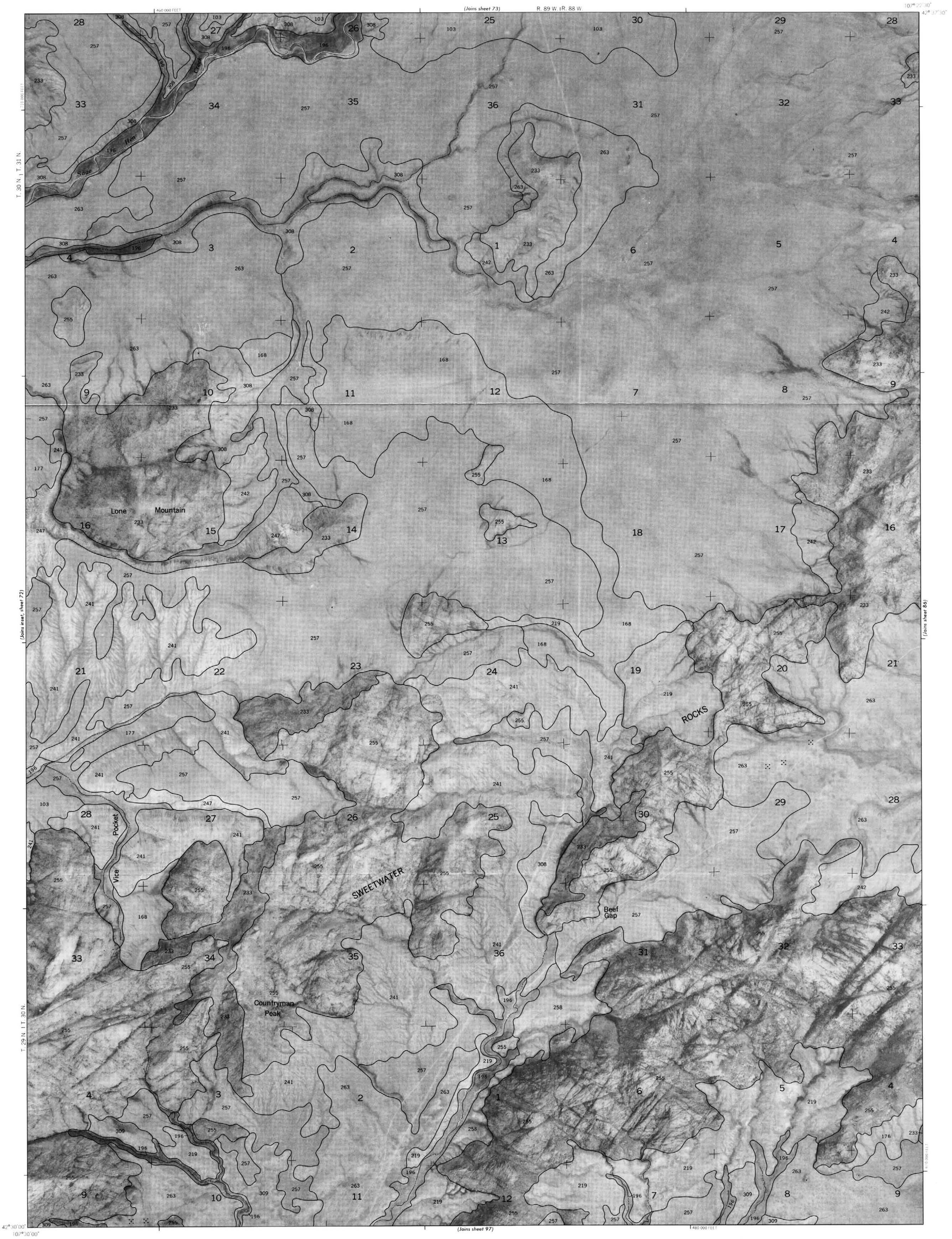


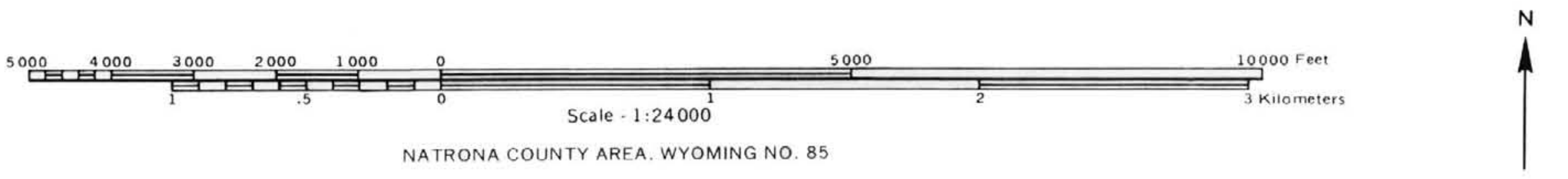
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

NATRONA COUNTY AREA, WYOMING NO. 84

N

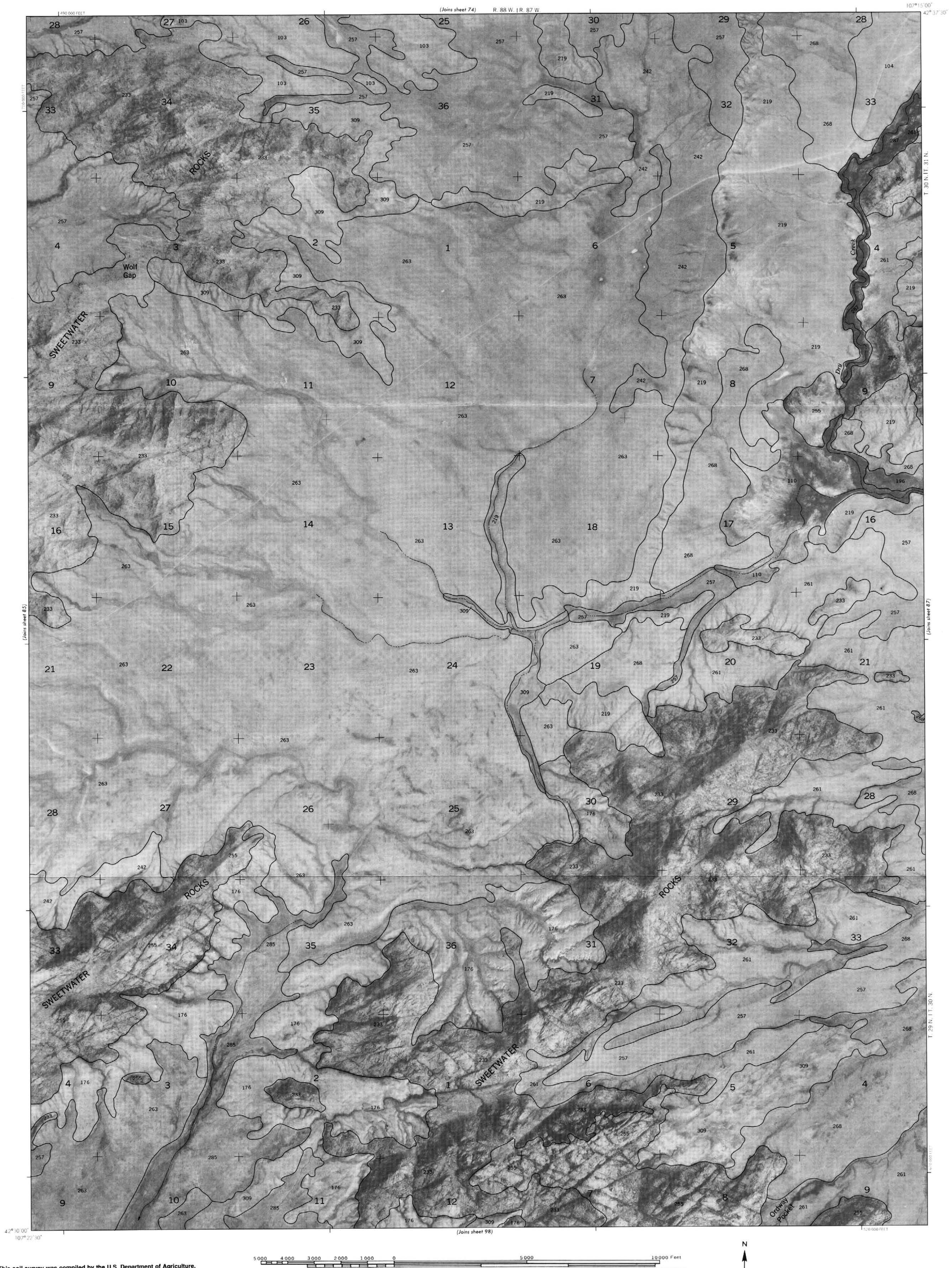




Scale - 1:24 000

NATRONA COUNTY AREA, WYOMING NO. 85

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

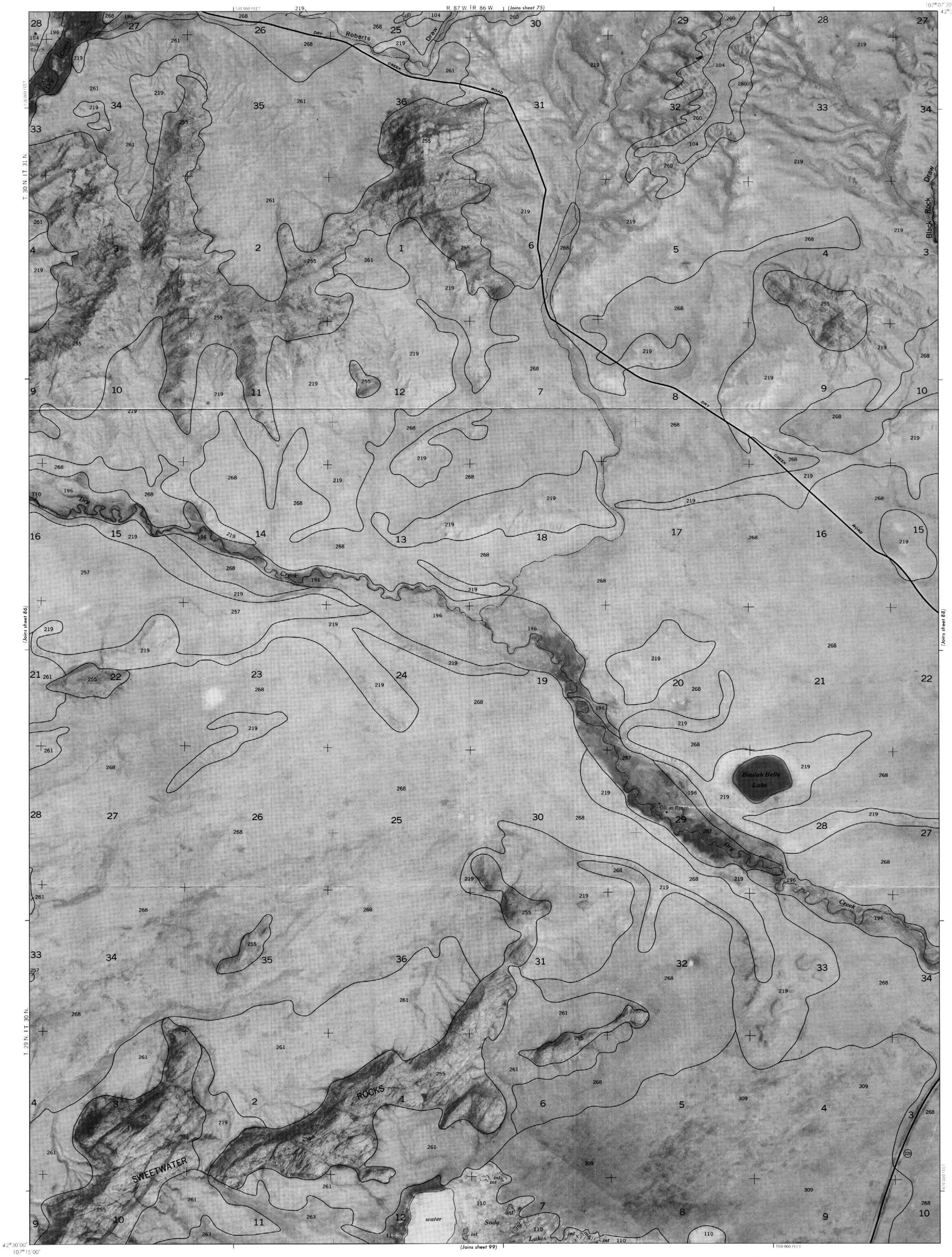


5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

N

NATRONA COUNTY AREA, WYOMING NO. 86

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



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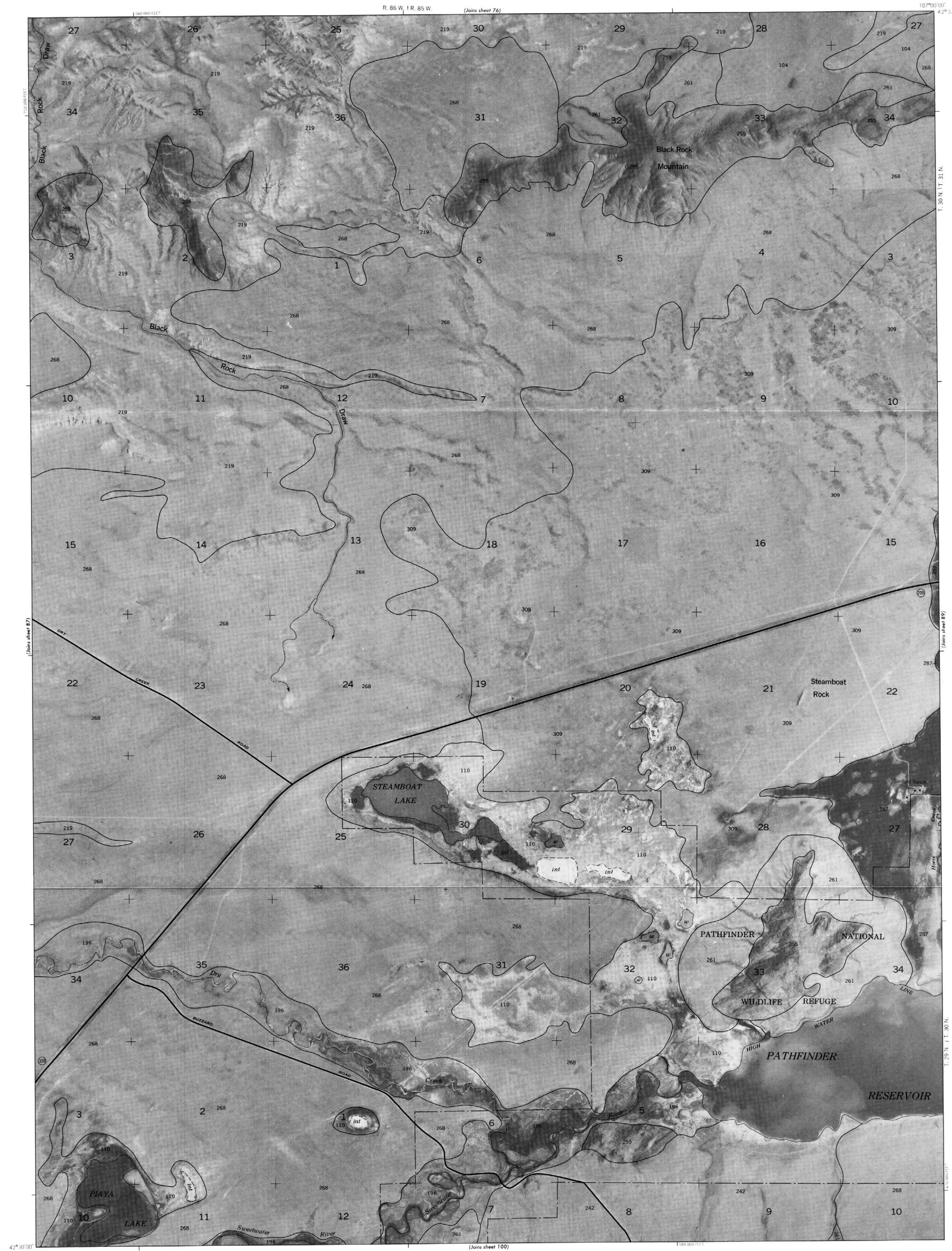
5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

NATRONA COUNTY AREA, WYOMING NO. 87



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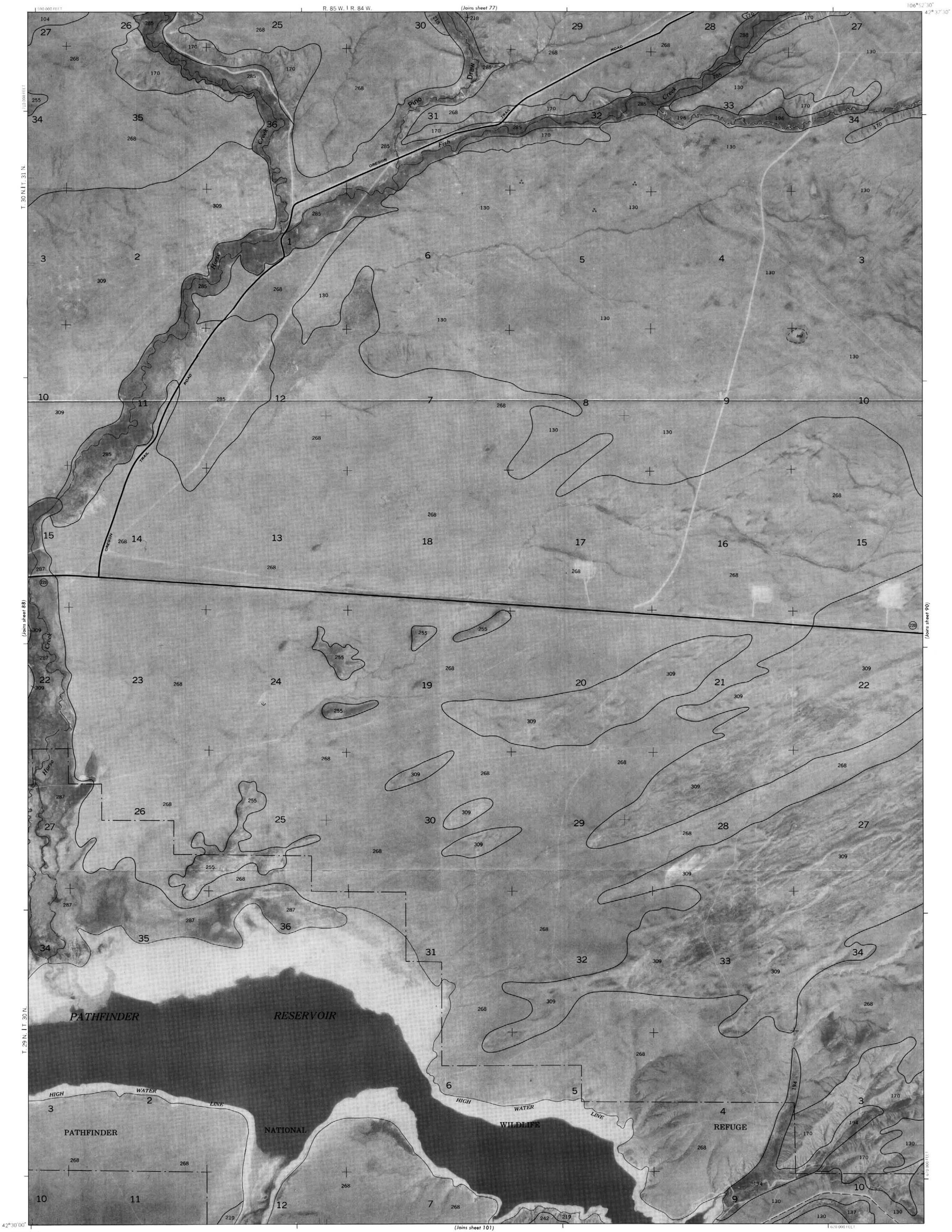
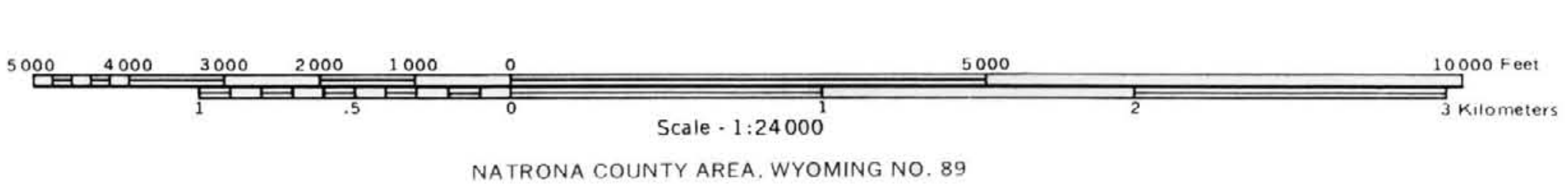
NATRONA COUNTY AREA, WYOMING NO. 88



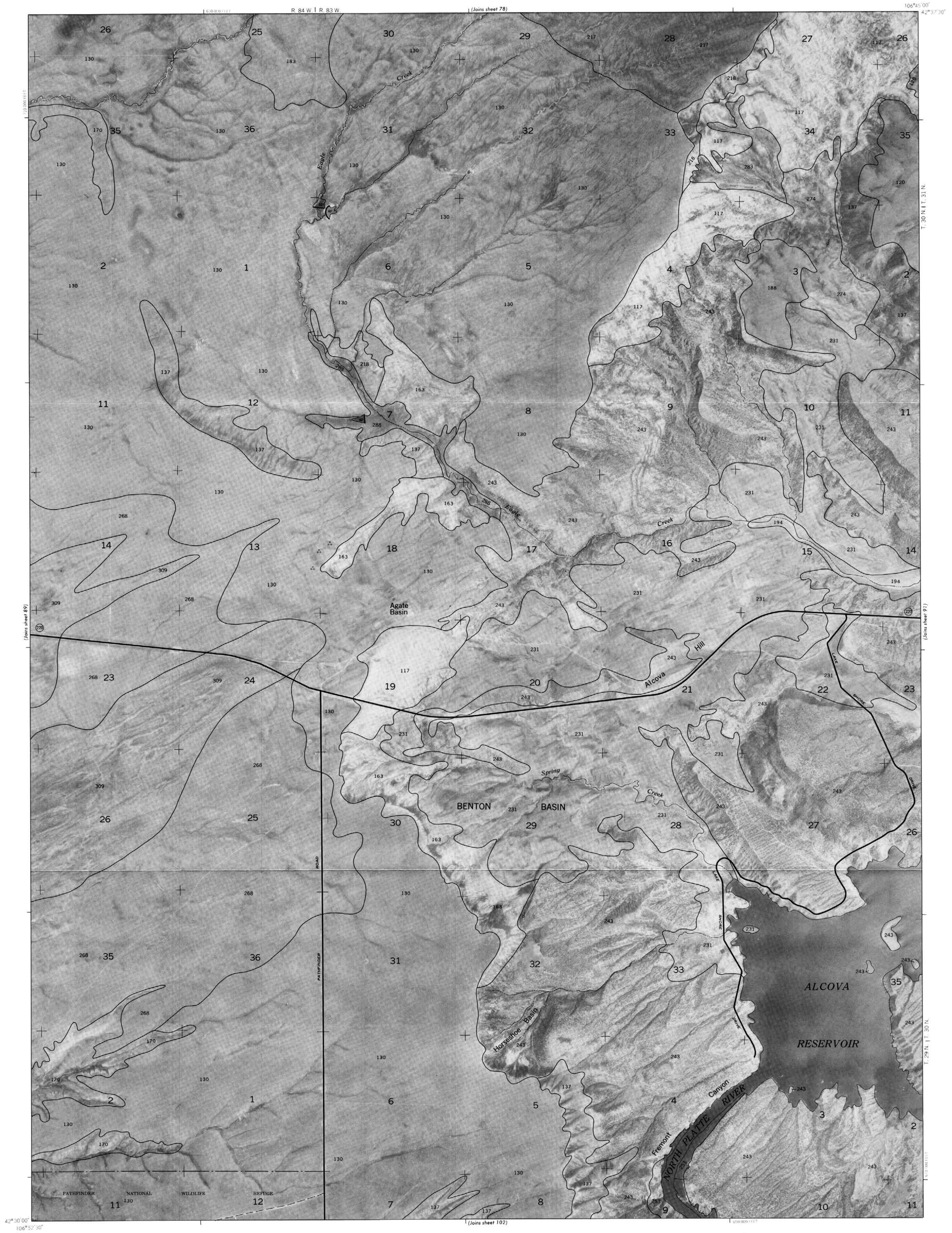


Scale - 1:24 000

NATRONA COUNTY AREA, WYOMING NO. 89

N

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



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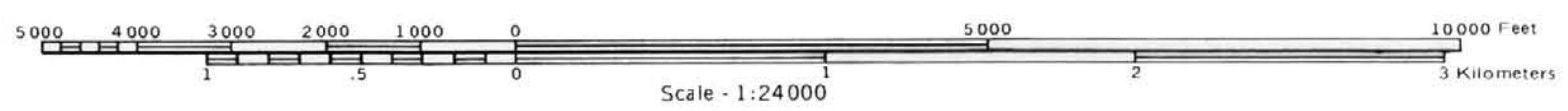
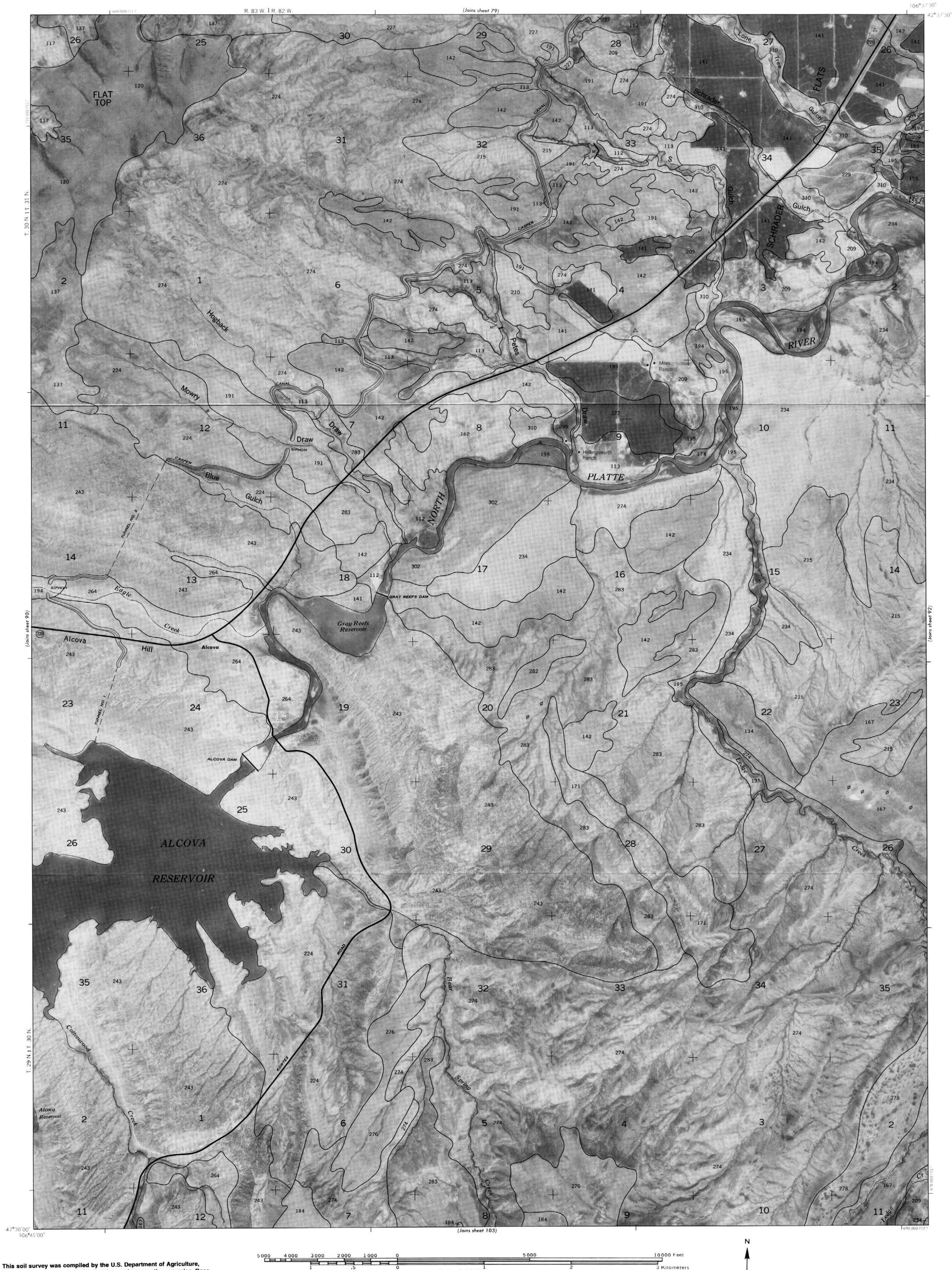


Scale - 1:24000

NATRONA COUNTY AREA, WYOMING NO. 90

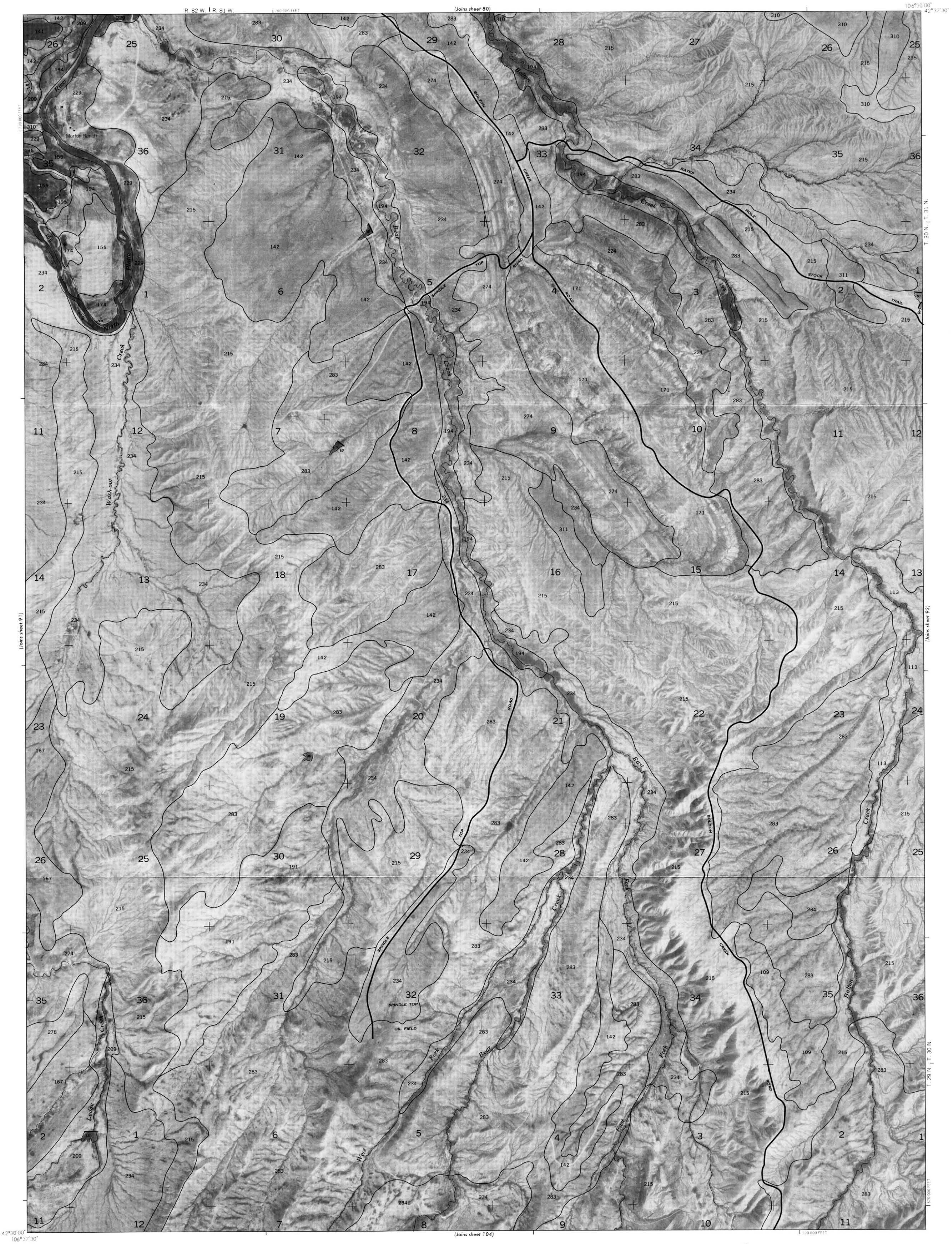
N



Scale - 1:24000

NATRONA COUNTY AREA, WYOMING NO. 91

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



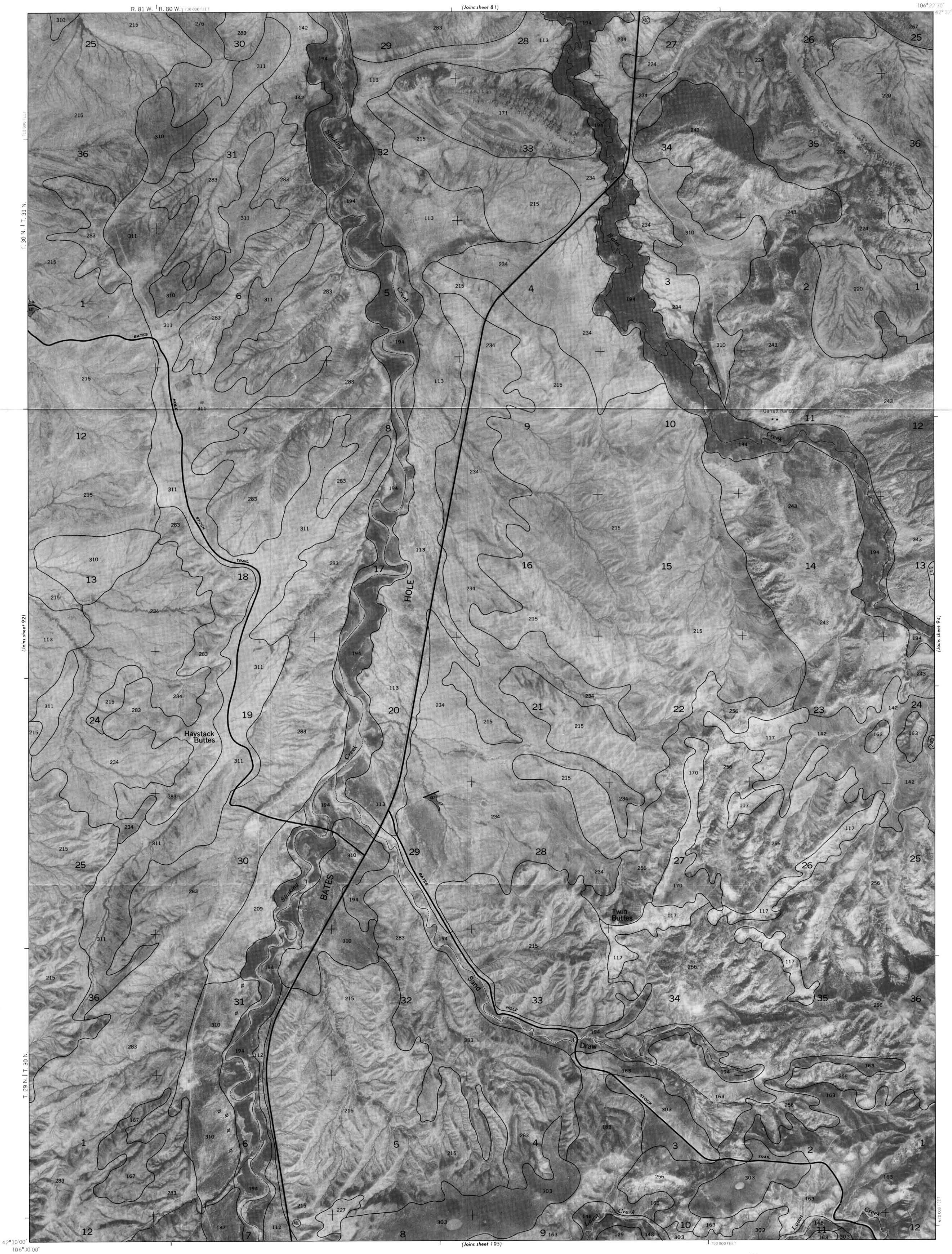
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet

1 .5 0 1 2 3 Kilometers

Scale - 1:24000

N

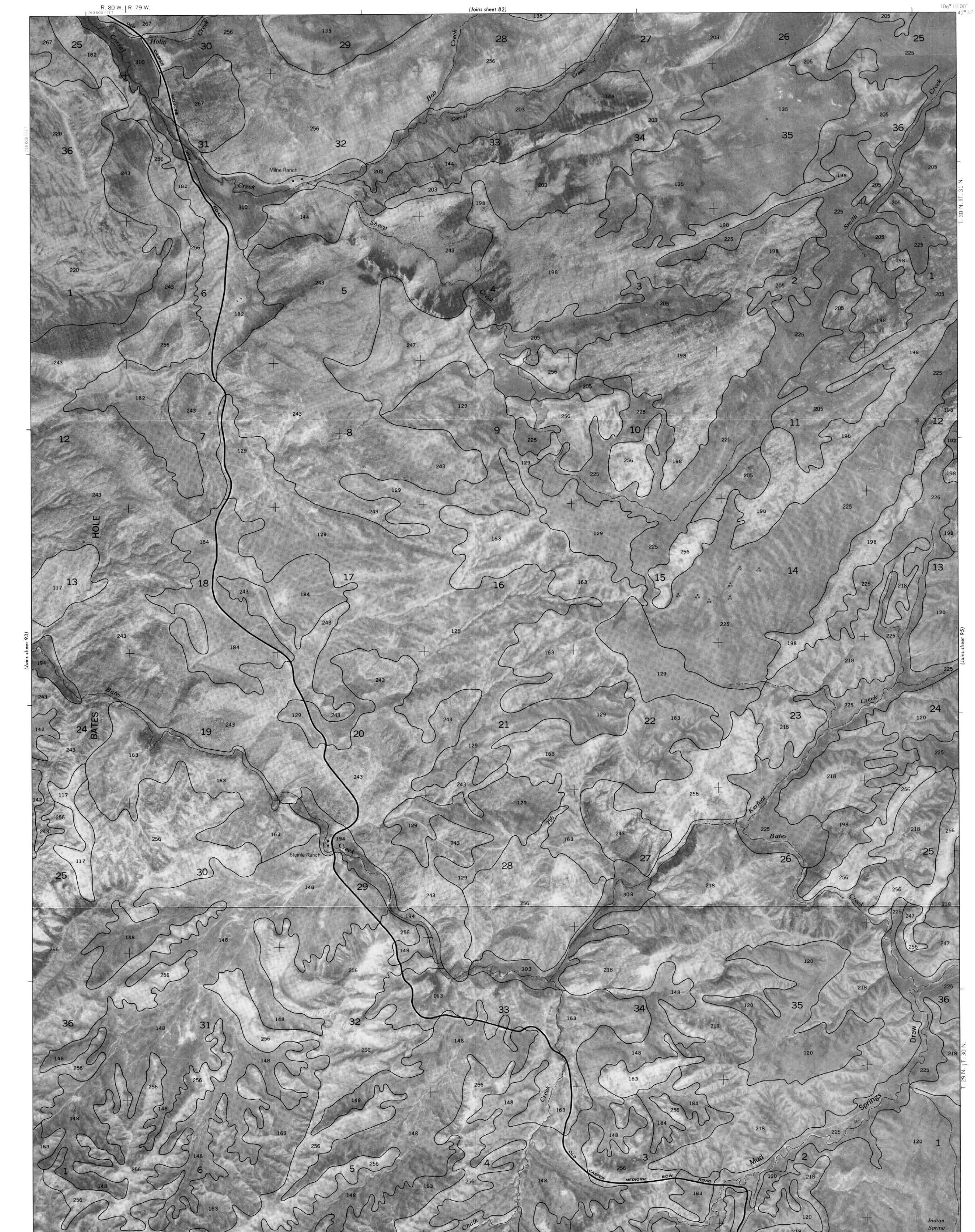


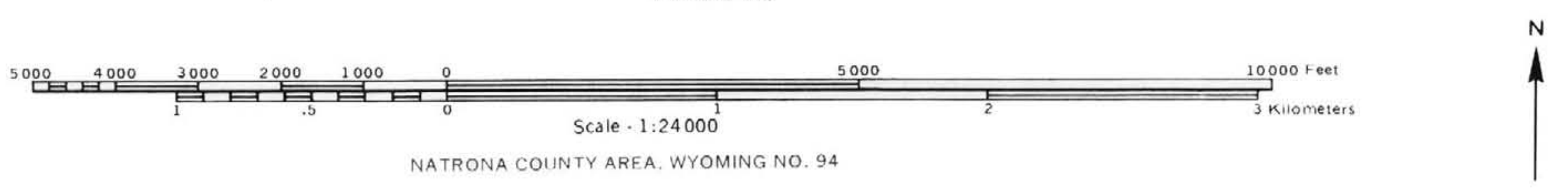
Scale - 1:24 000

NATRONA COUNTY AREA, WYOMING NO. 93

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

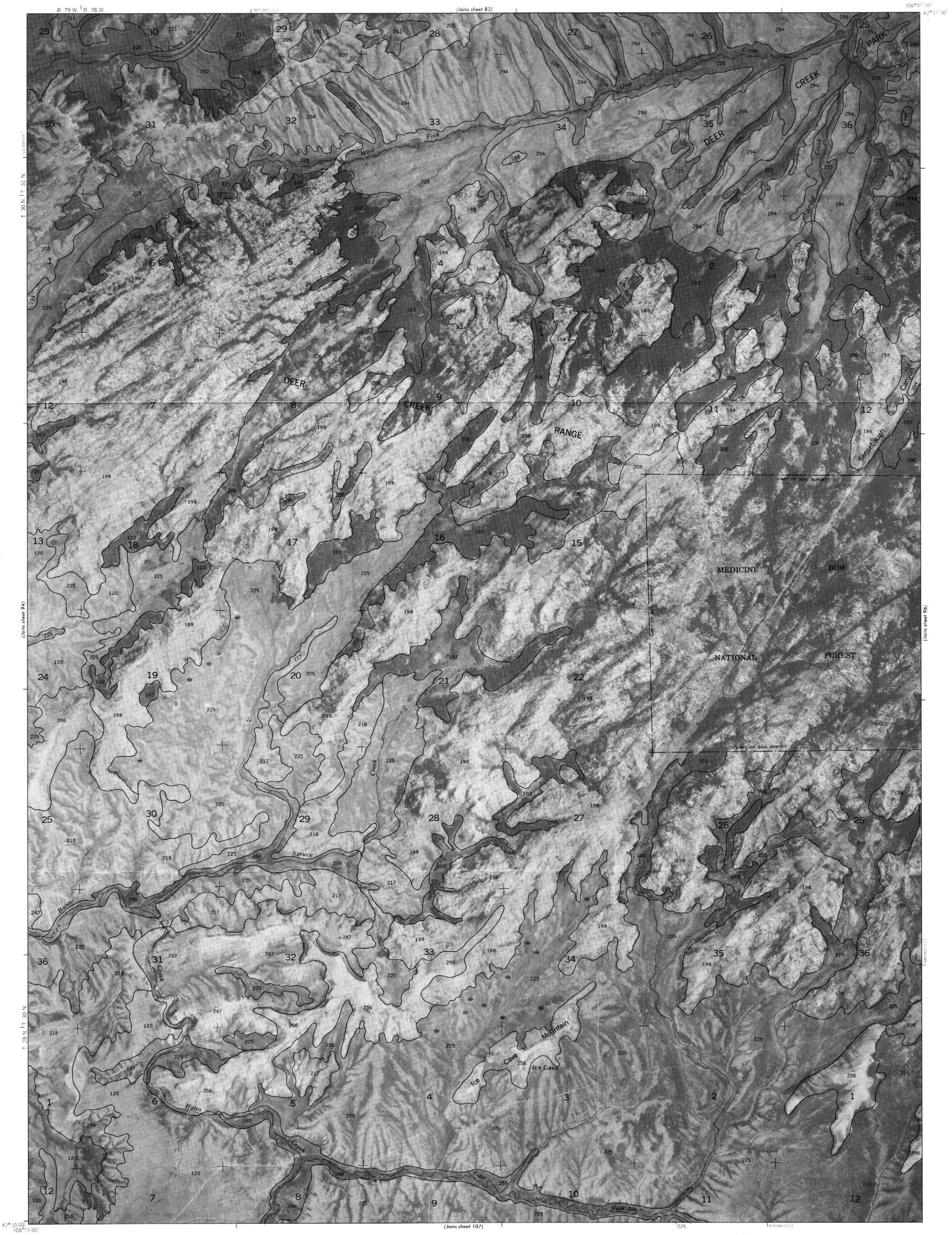
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE





This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 94

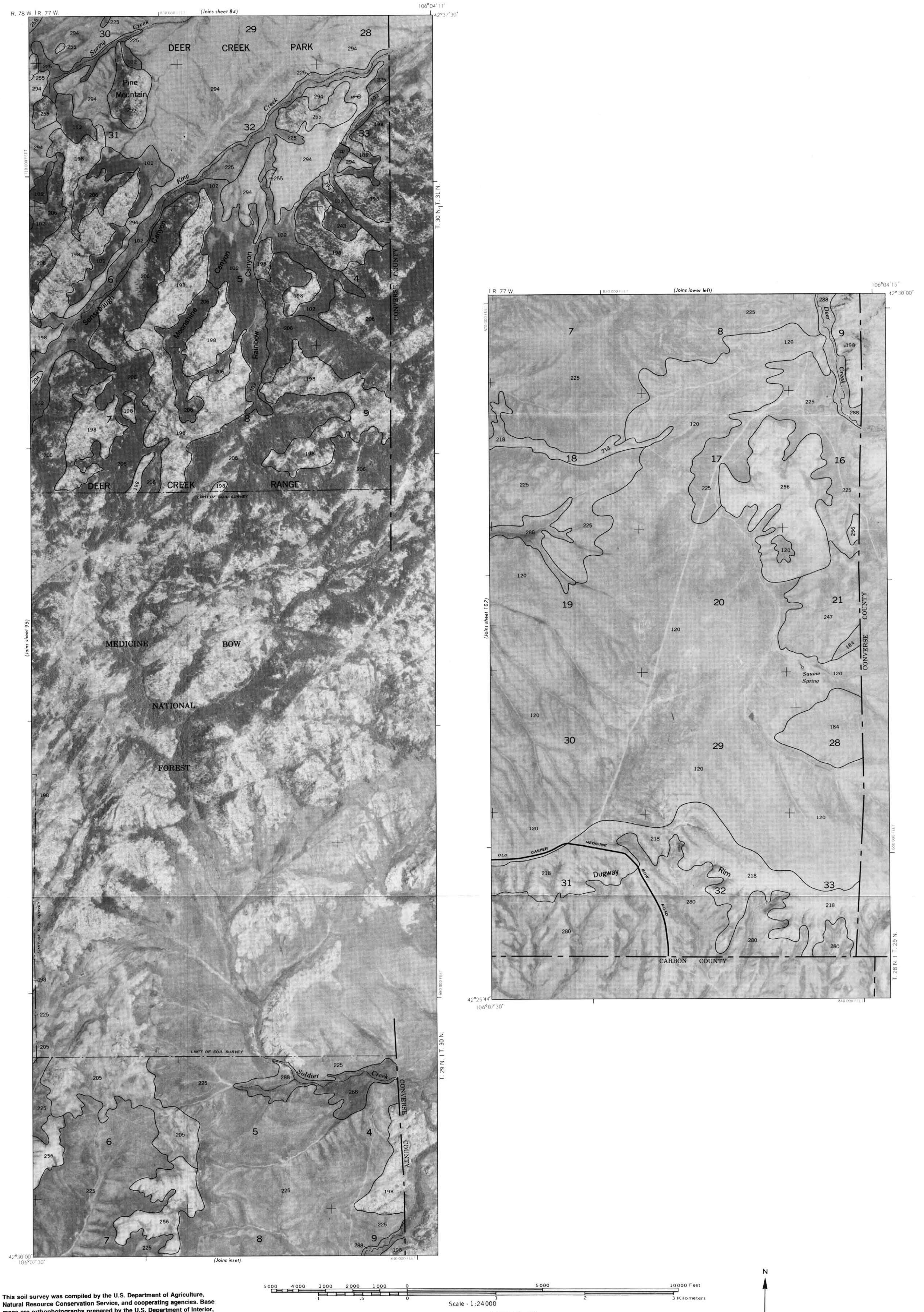


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

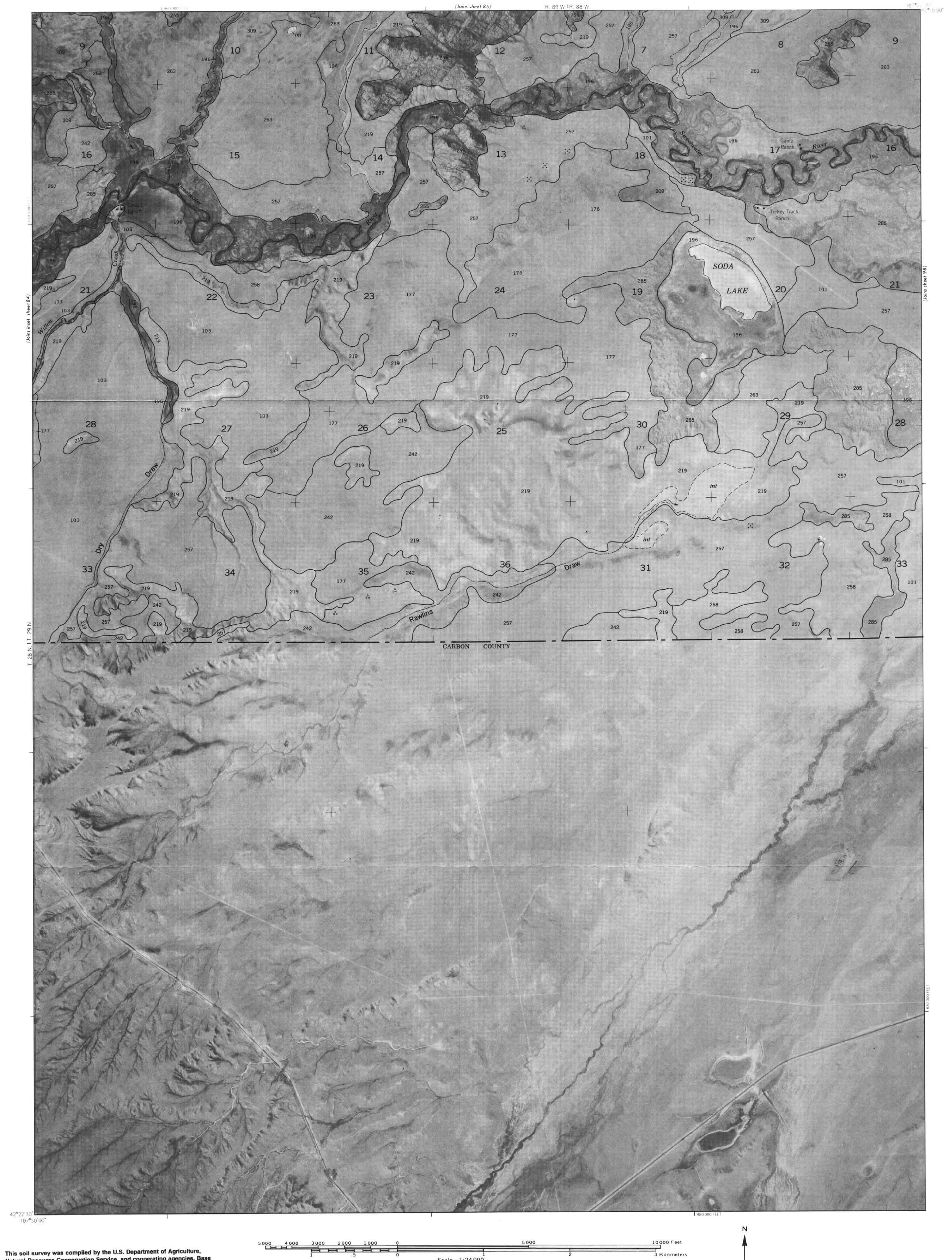
N

NATRONA COUNTY AREA, WYOMING NO. 95



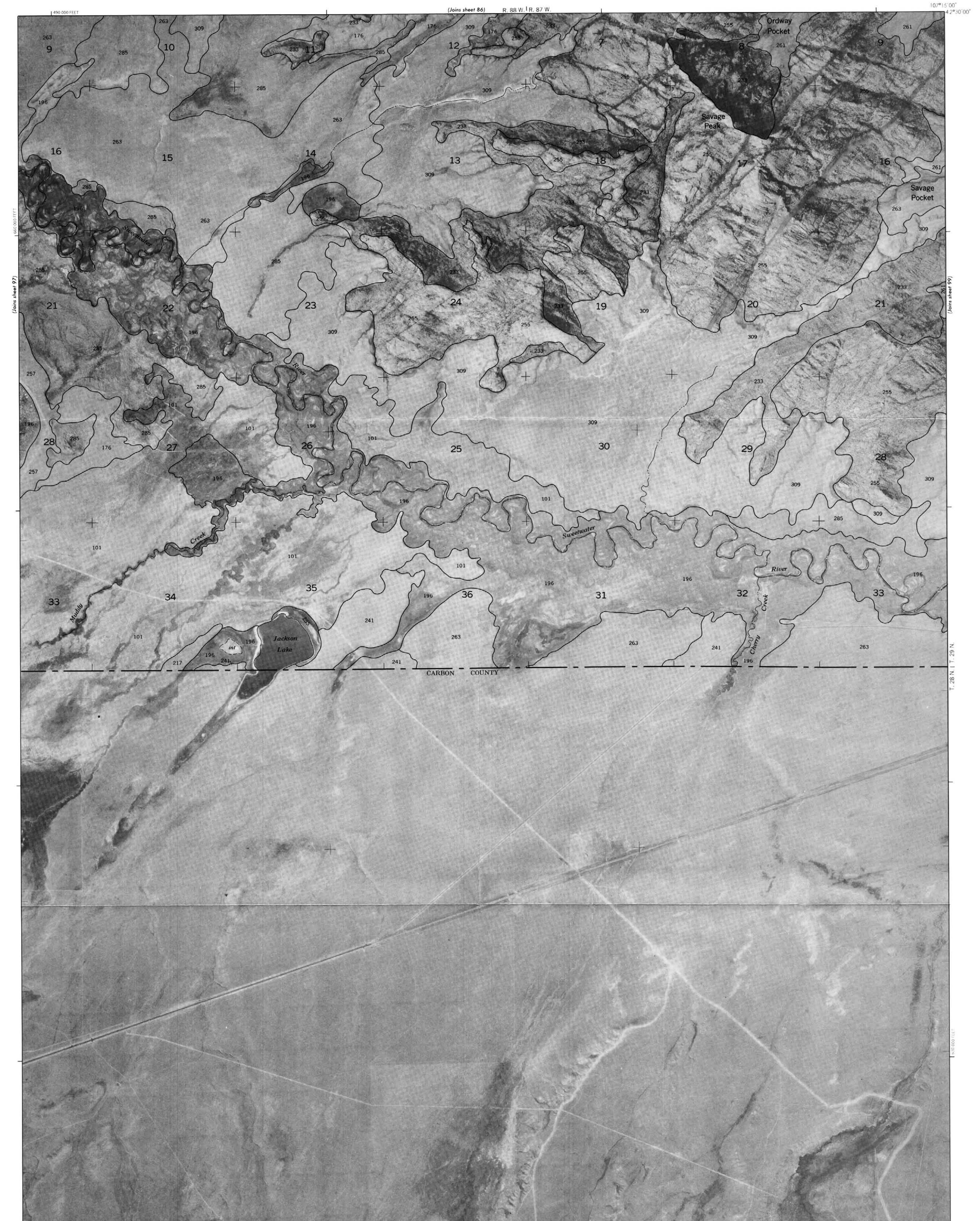
This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 96



This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 97

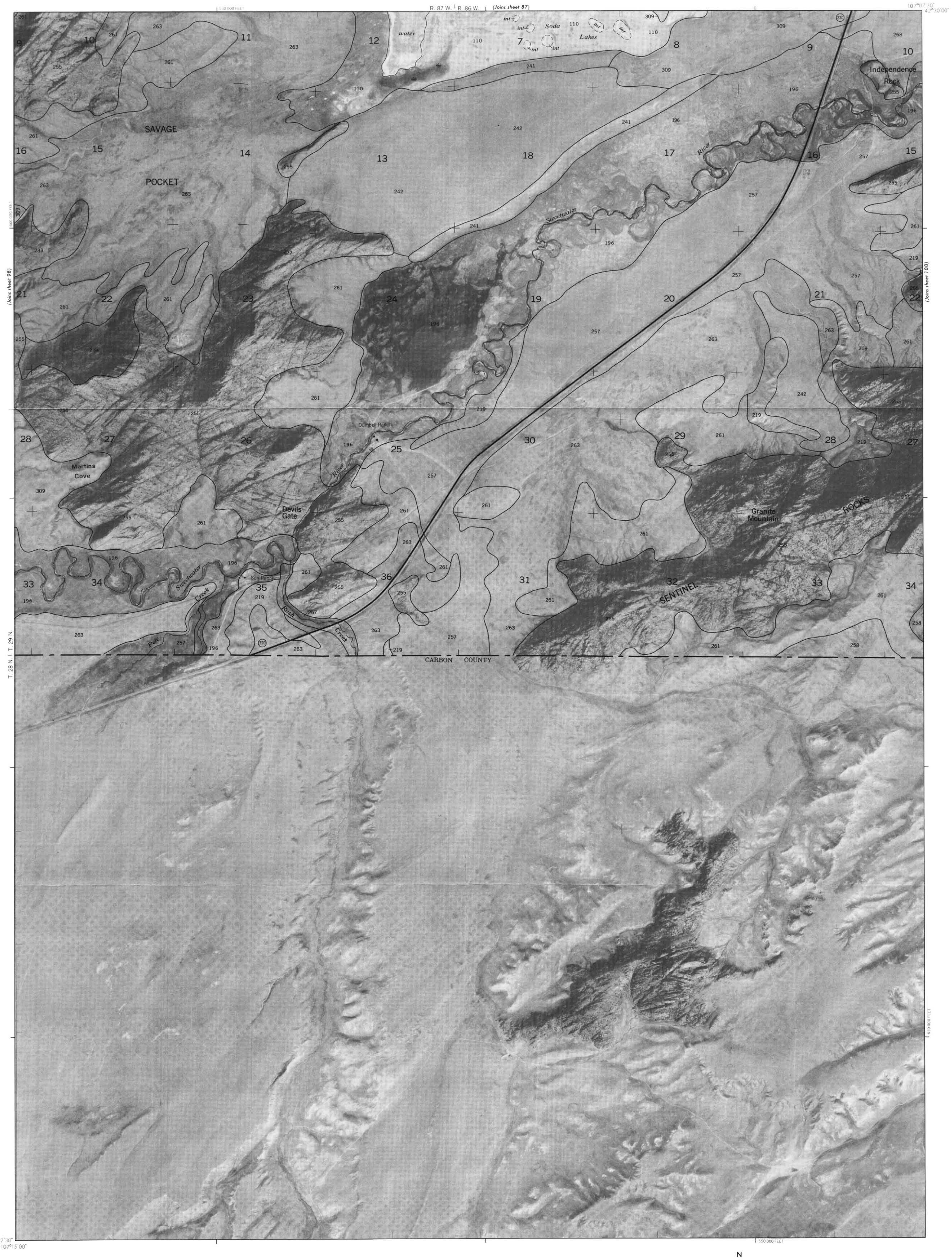


This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

5000 4000 3000 2000 1000 0 5000 10 000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

N

NATRONA COUNTY AREA, WYOMING NO. 98

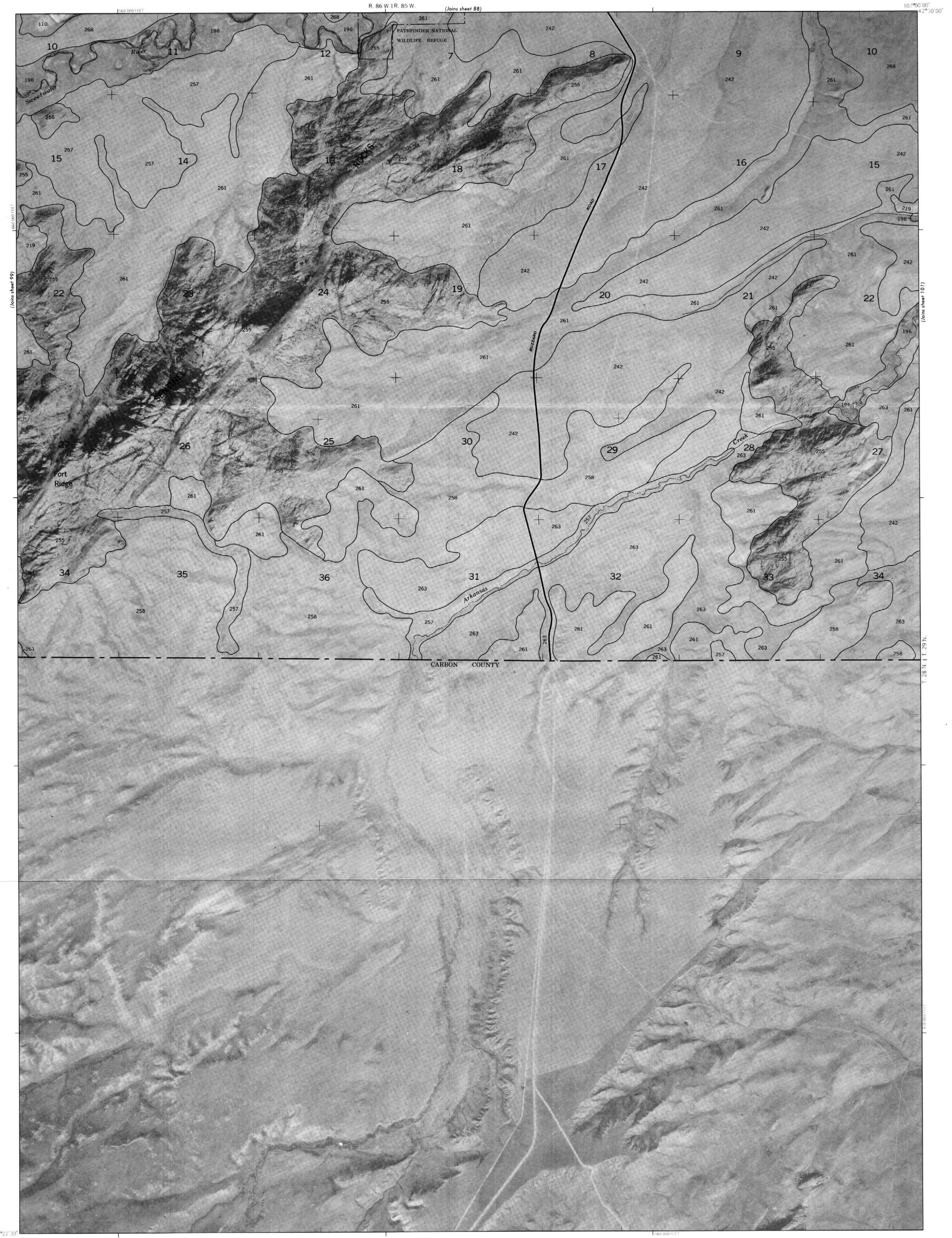


5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

N

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 99

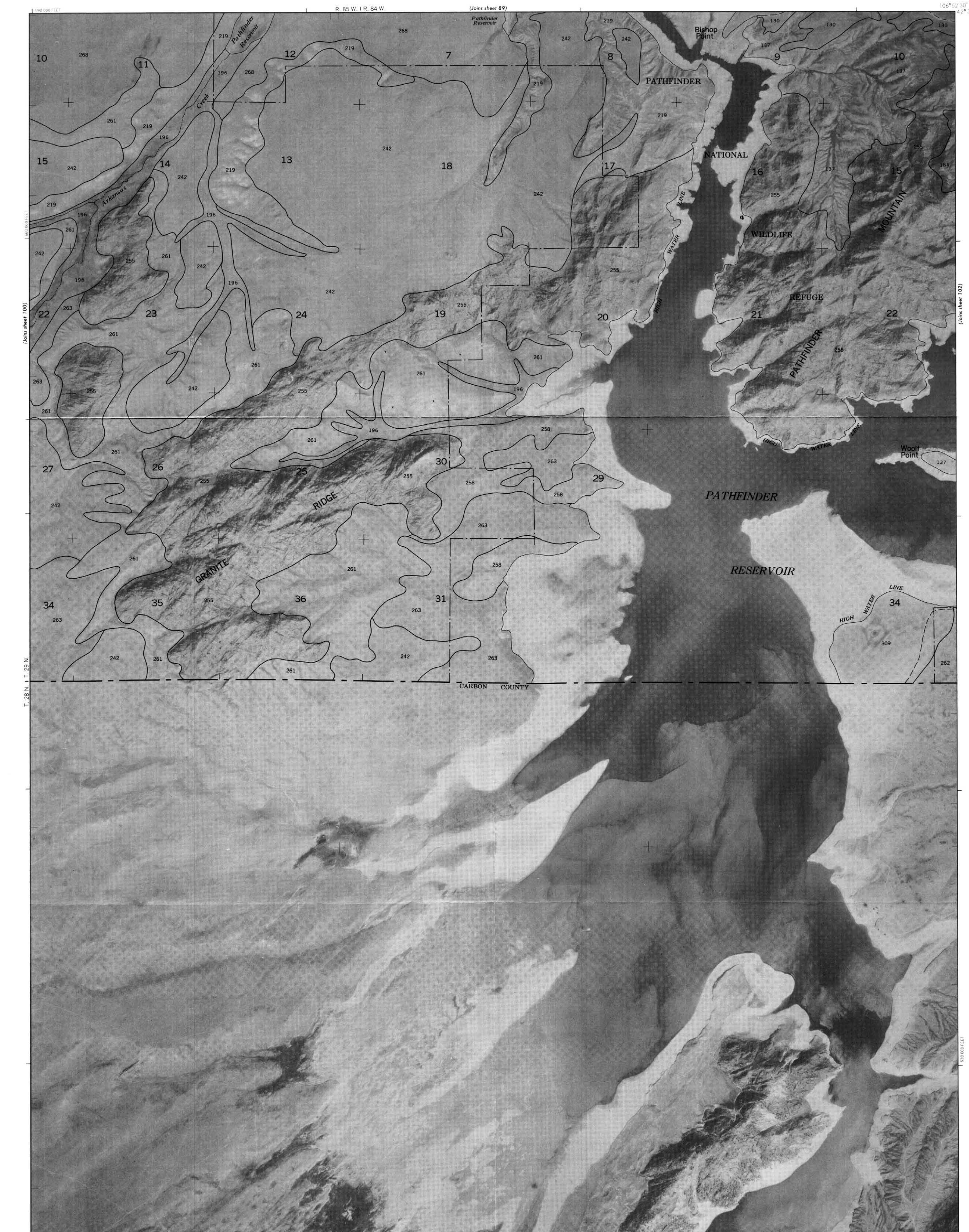


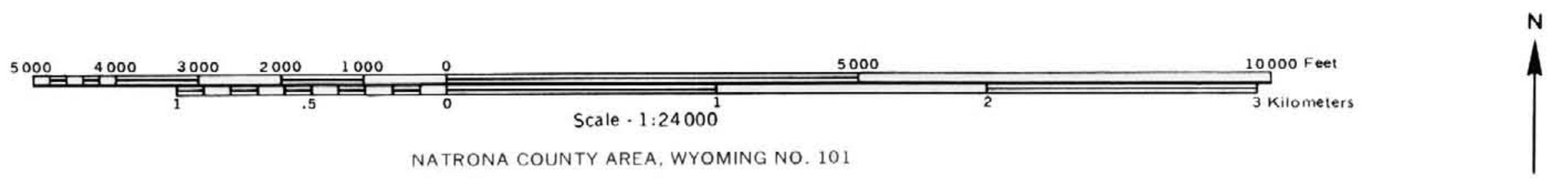
5 000 4 000 3 000 2 000 1 000 0 5 000 10 000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24 000

N

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

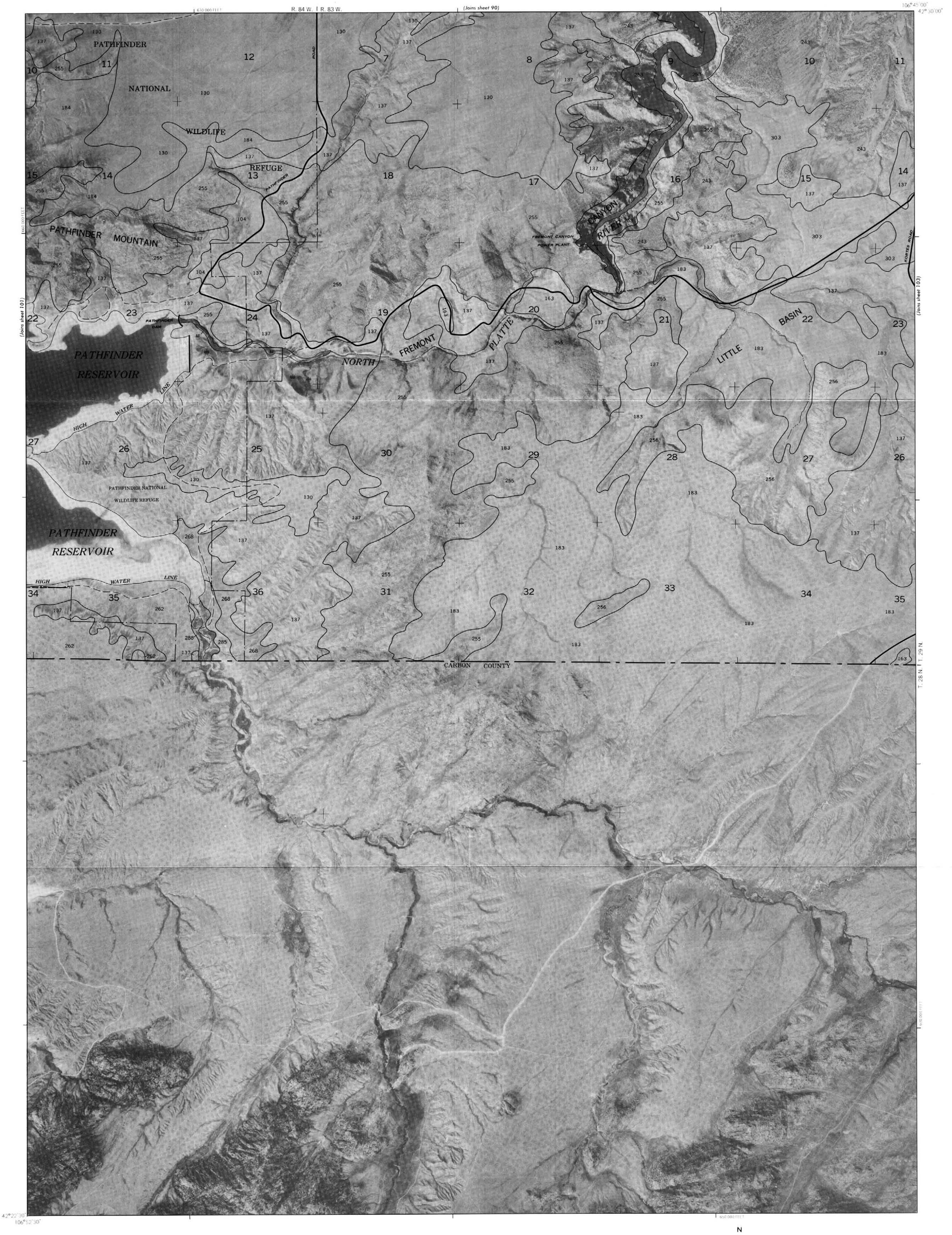
NATRONA COUNTY AREA, WYOMING NO. 100





This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 101



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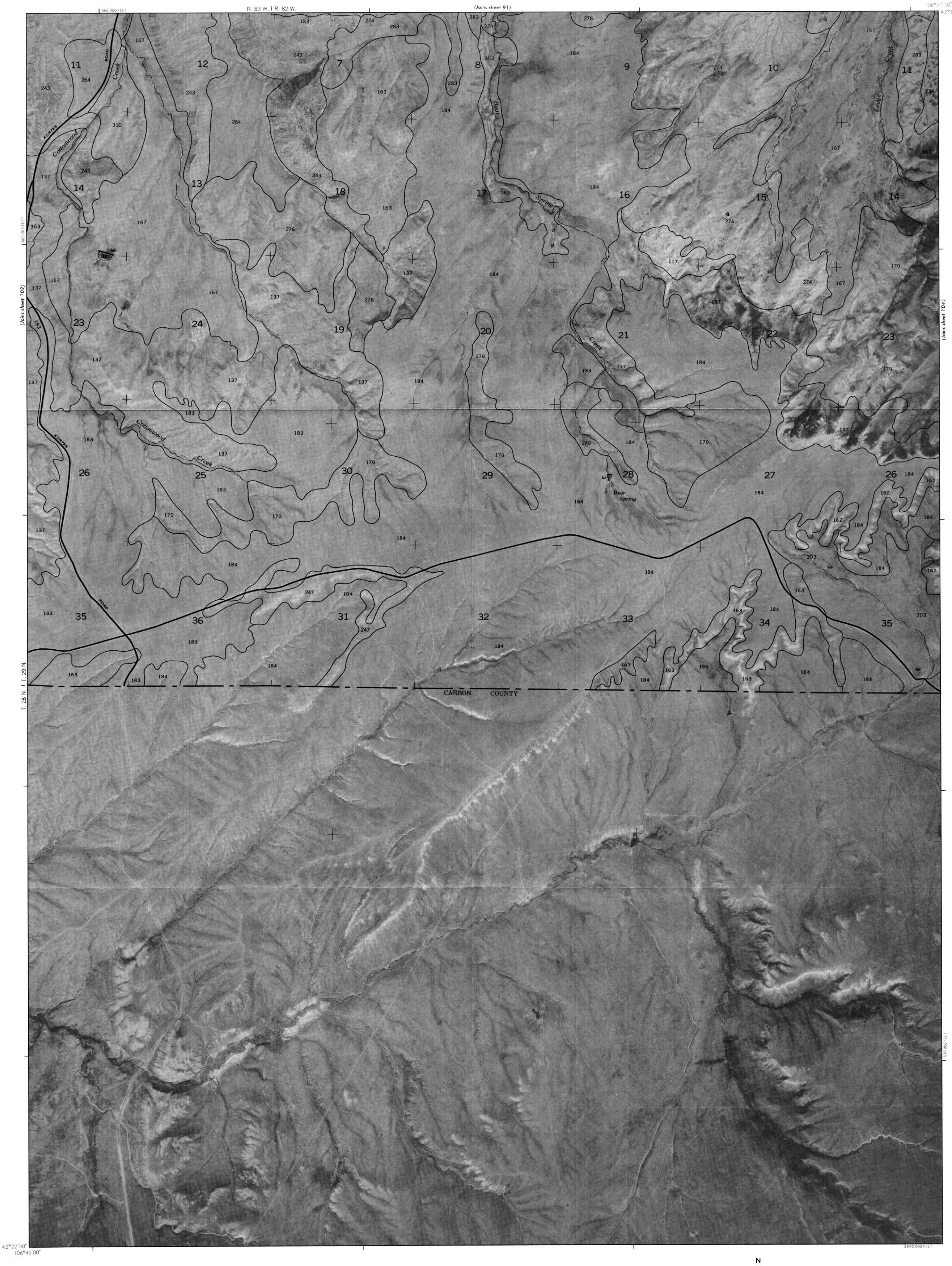
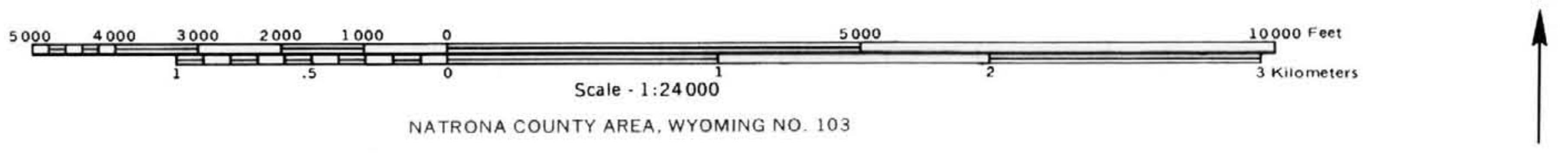
NATRONA COUNTY AREA, WYOMING NO. 102





Scale - 1:24 000

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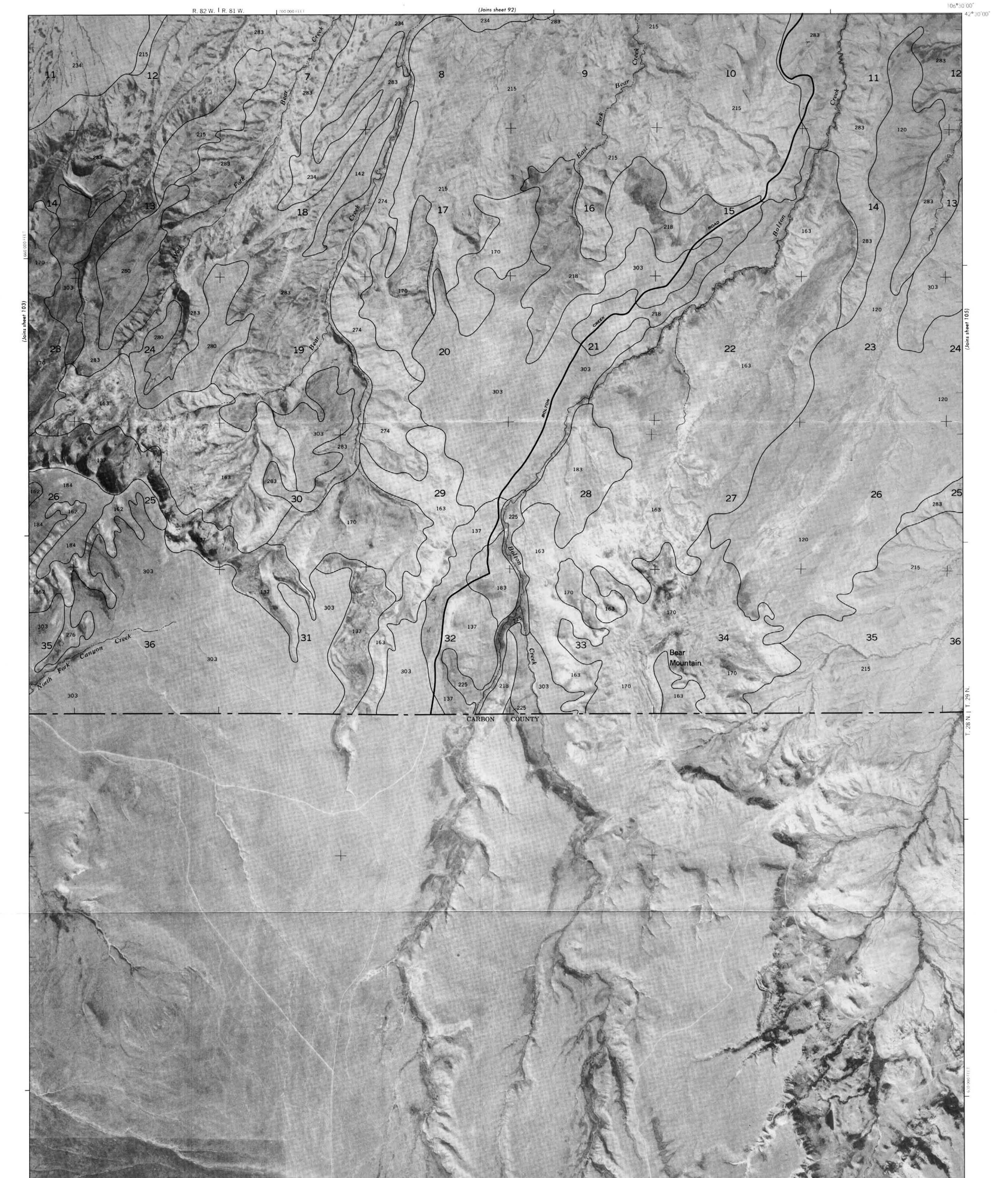
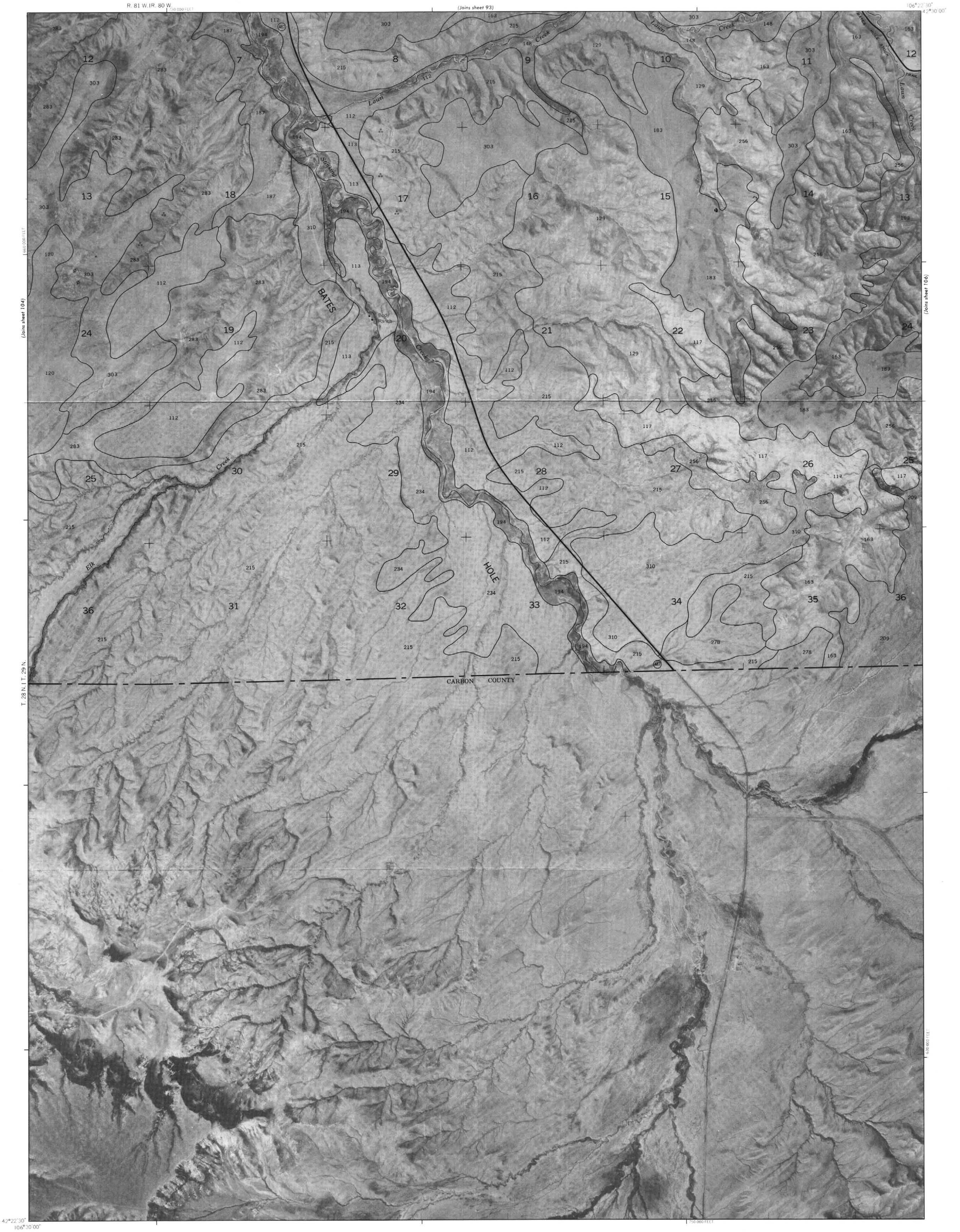


5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.

NATRONA COUNTY AREA, WYOMING NO. 104



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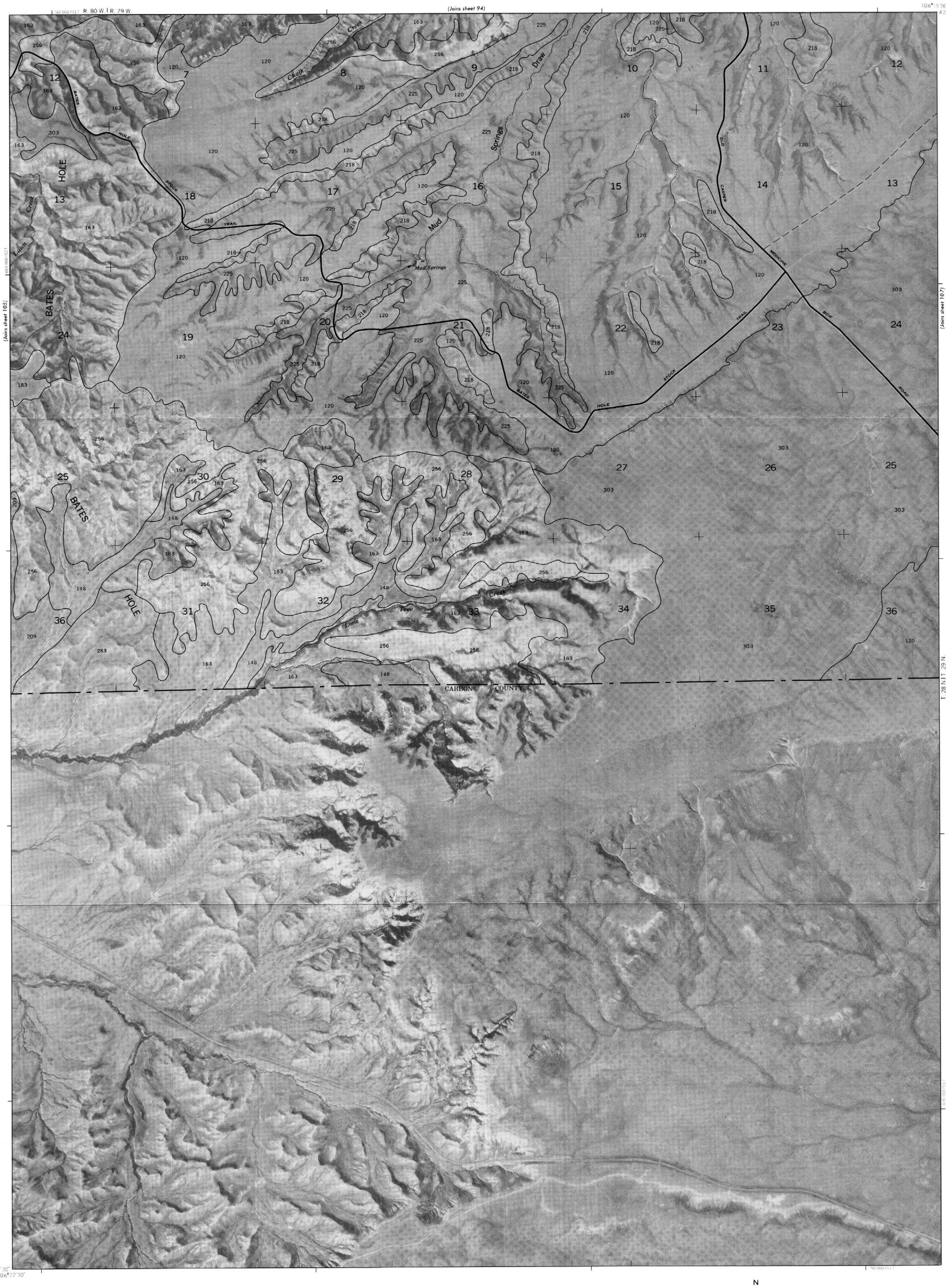
5000 4000 3000 2000 1000 0 5000 10000 Feet
1 .5 0 1 2 3 Kilometers
Scale - 1:24000

N

NATRONA COUNTY AREA, WYOMING NO. 105

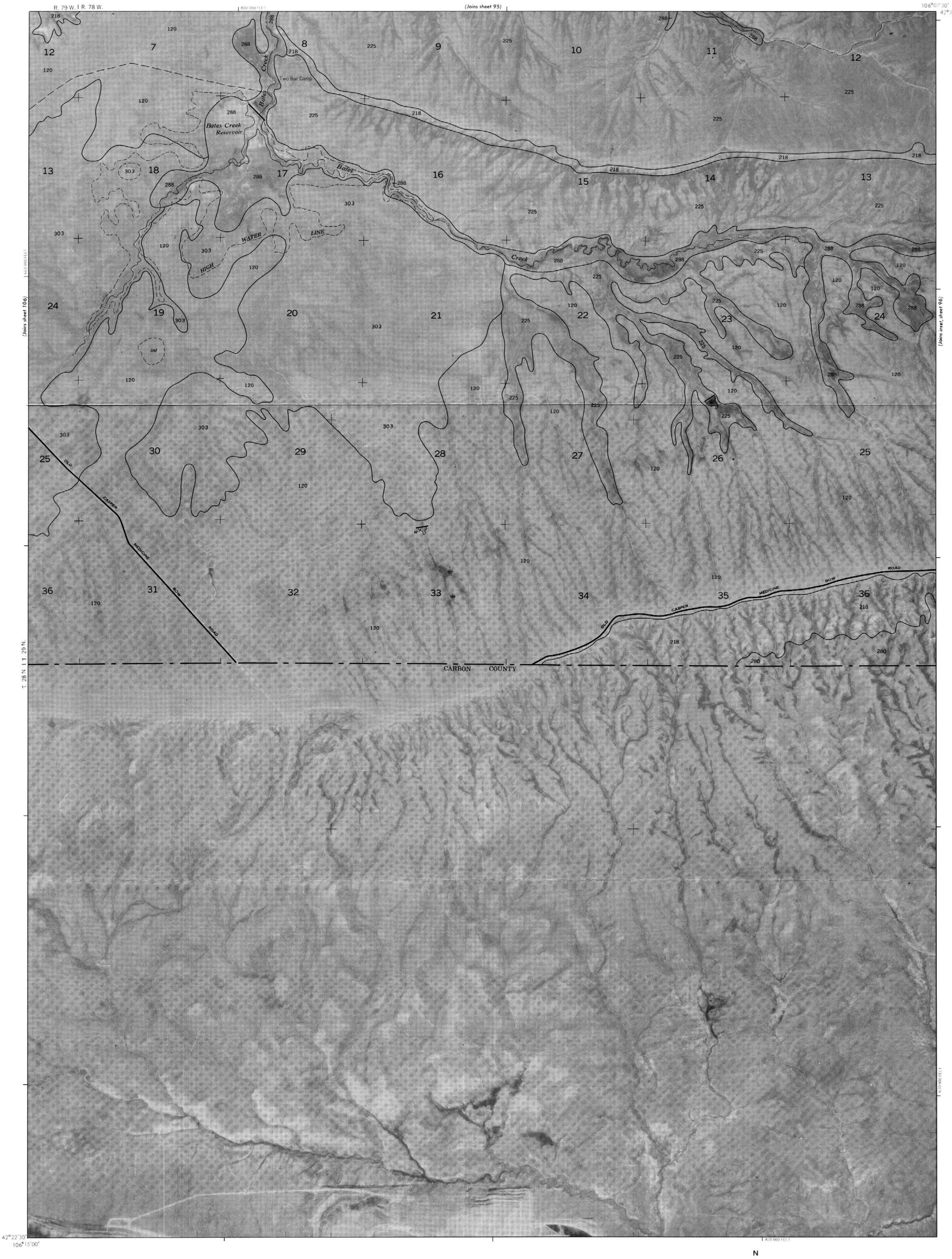
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

SHEET NO. 106
SOIL SURVEY OF NATRONA COUNTY AREA, WYOMING



NATRONA COUNTY AREA, WYOMING NO. 106

This soil survey was compiled by the U.S. Department of Agriculture, Natural Resource Conservation Service, and cooperating agencies. Base maps are orthophotographs prepared by the U.S. Department of Interior, Geological Survey, from 1974-1979 aerial photography. Coordinate grid ticks and land division corners, if shown, are approximately positioned.



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NATRONA COUNTY AREA, WYOMING NO. 107